

VPDES PERMIT FACT SHEET

This document gives pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a minor, municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260 et seq. The discharge results from the operation of a municipal wastewater treatment facility. This permit action consists of updating the permit to reflect agency policies and procedures. SIC Code: 4952 – Sewerage Systems.

1. Facility Name and Address: Urbanna STP
110 Laurel Hill Road
Urbanna, VA 23175
Middlesex County
2. Permit No. VA0026263 Permit Expiration Date: January 31, 2012
3. Owner Contact:
Name: Ms. Jamie S. Heisig-Mitchell
Title: Hampton Roads Sanitation District (HRSD)
Chief of Technical Services Divisions
Telephone No.: 757-460-4220
Address: 1436 Air Rail Avenue, Virginia Beach, VA 23455
4. Application Complete Date: July 21, 2011
Permit Drafted By: Jaime Bauer
DEQ Regional Office: Piedmont Regional Office

Reviewed By: Brad Ricks Date: October 6, 2011
Curt Linderman Date: November 8, 2011
Allen Brockenbrough Date: November 28, 2011
5. Receiving Stream:
Name: Urbanna Creek
River Mile: 3-URB001.47
Basin: Rappahannock River
Subbasin: N/A
Section: 1
Class: II
Special Standards: a

1-Day, 10-Year Low Flow: Flow frequencies
7-Day, 10-Year Low Flow: for tidal streams
30-Day, 5-Year Low Flow: cannot be calculated
30-Day, 10-Year Low Flow:
Harmonic Mean Flow:
Tidal? Yes
On 303(d) list? Yes
(See **Attachment 1**)
6. Operator License Requirements: The recommended attendance hours by a licensed operator and the minimum daily hours that the treatment works should be manned by operating staff are contained in the Sewage Collection and Treatment Regulations (SCAT) 9 VAC 25-790 et seq. A Class III licensed operator is required for the facility.
7. Reliability Class: Reliability is a measurement of the ability of a component or system to perform its designated function without failure or interruption of service. The reliability classification is based on the water quality and public health consequences of a component or system failure as contained in the SCAT Regulations (9 VAC 25-790 et seq). The permittee is required to maintain

Class I Reliability for the proposed facility.

8. Permit Characterization:
☐ Private ☐ Federal ☐ State ☒ POTW ☐ PVOTW
☐ Possible Interstate Effect ☐ Interim Limits In Other Documents

9. Table 1: Wastewater Flow and Treatment:

Outfall Number	Wastewater Source	Treatment	Flow
001	Town of Urbanna (private residences and restaurants)	Comminutor, bar screening, grit removal, flow equalization, aeration, secondary clarification, ultraviolet (UV) disinfection, aerobic sludge digestion, and drying beds	0.100 MGD design capacity

See **Attachment 2** for a facility diagram.

10. Sludge Disposal: Solids are pumped to an aerobic digester and then to two drying beds. Dried solids are transported to a landfill (Waste Management Middle Peninsula Regional Landfill or BFI King & Queen Sanitary Landfill, as an alternative). If the dewatering facilities at this plant are unavailable, the sludge will be taken to other HRSD facilities (King William or West Point STPs) for further treatment. As a contingency plan, this facility can also receive solids that have been aerobically digested from HRSD West Point STP and/or King William STP in case the drying beds at these facilities were unavailable. Sludge disposal methods described herein are appropriate and in accordance with the Sludge Management Plan required by the VPDES regulations.
11. Discharge Location Description: Urbanna Creek.
Name of USGS topo map: Saluda (123-D) (See **Attachment 3**)
12. Material Storage: Alum is stored outside in containment pallets in 15-gallon totes. Polymer is stored in 5-gallon pails. The pallets are part of an enclosed system that is able to contain a spill if one were to occur preventing the release of contaminated storm water. No other chemicals are stored on site.
13. Ambient Water Quality Information: Ambient water quality data from monitoring station 3-URB001.50 was used in this analysis; the station is located on the south side of Urbanna Creek at the Department of Game and Inland Fishery boat ramp near the end of Route 418. It is directly across the creek from the facility's outfall. This station was selected upon the advice of DEQ Piedmont Regional Office Senior Water Quality Planner, J. V. Palmore. See **Attachment 4**.
14. Antidegradation Review and Comments: Tier 1 ____ Tier 2 **X** Tier 3 ____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect those uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with a Tier determination. During the 2007-2012 permit cycle, the receiving stream, Urbanna Creek, was deemed to be a Tier 2 waterbody. Although the Rappahannock mesohaline estuary is impaired for low dissolved oxygen, monitoring in Urbanna

Creek shows acceptable local conditions and no additional data is available to indicate Tier 1 conditions. Therefore, the tier designation remains a Tier 2.

15. Site Inspection: Performed By: J. Bauer, M. Williams, H. Horne Date: October 20, 2011 (**Attachment 5**).

16. Effluent Screening:

Effluent data including DMR, application, and temperature data is included in **Attachment 6**.

The permit limitations for BOD₅, TSS and pH are based on the secondary treatment standards in the federal effluent guidelines.

Reasonable Potential Evaluation

Dale Phillips (former Virginia State Water Control Board staff) performed a CORMIX analysis for this facility as documented in a memorandum March 17, 1993 (**Attachment 7**). Final recommendations were to use a dilution factor of 25 for acute, chronic, and human health waste load allocations (WLAs). This dilution factor was confirmed by Allan Brockenbrough, DEQ Office of Water Programs, in an email dated January 19, 2005. In an email dated September 5, 2011, Sharon Nicklas, HRSD Permits Manager, confirmed that the installed diffuser at the outfall is 12 feet long and is 6 inches in diameter with 10 ports located 16 inches apart.

Included in **Attachment 8** are the effluent limitation development documents including the MSTRANTI data source table, MSTRANTI spreadsheet of WLAs, and STATS.exe analyses for the following parameters identified as present in the effluent and for which a reasonable potential exists to impact water quality: ammonia, copper, zinc, and nickel. Using the lesser of the DEQ or laboratory quantification level, the observed concentration is evaluated to determine if limitations are necessary to protect water quality.

The MSTRANTI Excel Spreadsheet was used to calculate acute and chronic waste load allocations (WLAs). The WLAs are entered in to the STATS.exe computer application to determine the need for a permit limitation and calculate the limitation. Because it is known that ammonia is present in the effluent of domestic wastewater discharges, effluent data is not necessary to determine that ammonia has a reasonable potential to impact water quality in accordance with GM00-2011. An expected value of 9.00 mg/L for ammonia was used to determine if limitations were necessary in accordance with procedures established in GM00-2011. Additionally, the ammonia reasonable potential analysis was divided into two parts: annual and winter. In the 2007-2012 permit cycle, a winter tier for the ammonia limitation has been established that applies in the months of November through April. The ammonia WLA is determined based on ambient and effluent temperature data. When determining the ammonia WLA for the "winter tier" the 90th percentile temperature statistic from only readings collected in the months of November through April were used. For the annual ammonia WLA calculation, the entire temperature data set was used.

The resulting evaluation for ammonia indicated that a limitation of 4.40 mg/L is necessary to protect water quality annually and a limitation of 10.75 mg/L from November through April. However, both of these limitations are less stringent than ammonia limitations established in 2007 permit limitation analyses. Therefore, ammonia limitations of 3.83 mg/L annually and 9.08 mg/L from November through April will remain effective in accordance with anti-backsliding provisions of the Clean Water Act and Virginia VPDES regulations. The 2007 permit limitation analysis is included in Attachment 8.

Since the disinfection method employed by the permittee is UV, residual chlorine is not a characteristic of the effluent. Therefore, no total residual chlorine evaluation is required.

Evaluation of effluent concentrations of copper, zinc, and nickel in STATS.exe indicated no reasonable potential exists for these parameters in the effluent to impact receiving waters. The observed concentrations in the effluent were 19.3 µg/L zinc, 2.84 µg/L copper, and 1.41 µg/L nickel.

Note that the permittee used a quantification level (QL) for nickel test that was greater than the DEQ established QL. Therefore, when the reasonable potential was performed in STATS.exe, the DEQ QL was used to determine if a limitation was necessary. Additionally, there are human health criteria for zinc and nickel of 65,000 µg/L and 12,000 µg/L, respectively. The observed concentrations are less than the Human Health Criteria, and no further analysis is needed.

These effluent limitations have been carried forward from the 2007 permit modification to avoid backsliding. A BEJ minimum monthly average DO limitation of 5.0 mg/L and a BEJ minimum instantaneous DO limitation of 3.2 mg/L are expected to maintain all applicable DO water quality standards prior to discharge.

The enterococci limitation is based on the WQS 9 VAC 25-260-170 (Bacteria; other recreational waters). In accordance with GM10-2003, the permit also contains a fecal coliform limitation of 200 per 100 milliliters, applied as a monthly geometric mean. Although the Water Quality Standards have been amended to remove the reference to the fecal coliform effluent limit in shellfish waters, the Virginia Department of Health, Bureau of Shellfish Sanitation still uses fecal coliform as an indicator for determining the quality of shellfish waters and it is necessary to ensure discharges meet this level. Since it has historically maintained the in-stream water quality criteria for fecal coliform of 14/43 per 100 milliliters, the 200 per 100 milliliters effluent limit will be used in shellfish waters in order to continue meeting the in-stream criteria and for protection of shellfish under the general standard.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		MO AVG	WE AVG	MIN	MAX	FREQ	SAMP TYPE
Flow	NA	NL – monitoring only		NA	NL	Continuous	Totalizing, Indicating and Recording
pH	1, 2	NA	NA	6.0 SU	9.0 SU	1 per Day	Grab
BOD ₅	2	30 mg/L (11 kg/d)	45 mg/L (17 kg/d)	NA	NA	1 Day per Week	8 HC
TSS	2	30 mg/L (11 kg/d)	45 mg/L (17 kg/d)	NA	NA	1 Day per Week	8 HC
NH ₃ (as N) (May – October)	3	3.83 mg/L	3.83 mg/L	NA	NA	1 per Month	8 HC
NH ₃ (as N) (November – April)	3	9.08 mg/L	9.08 mg/L	NA	NA	1 per Month	8 HC
Dissolved Oxygen (DO)	4	5.0 mg/L	NA	3.2 mg/L	NA	1 per Day	Grab
Enterococci	1	35 N/100 mL	NA	NA	NL	2 Days per Week (between 10am-4pm)	Grab
Fecal Coliform	4	200 N/100 mL	NA	NA	NL	2 Days per Week (between 10am-4pm)	Grab

1. Virginia Water Quality Standards
2. Secondary Treatment Limitations (40 CFR Part 133)
3. Water Quality Based Effluent Limitations
4. Best Engineering Judgment (BEJ)

17. **Basis for Sludge Use & Disposal Requirements:** This facility does not land apply sludge; therefore there are no limitations or monitoring applicable to sludge. Sludge will be handled in accordance with the Sludge Management Plan. Applicable sludge requirements are addressed by the facility that receives the sludge (DEQ Solid Waste Permit 572).
18. **Antibacksliding:** All limitations are the same or more stringent than limitations in the 2007-2012 permit.

19. **Compliance Schedules:** Not applicable.

20. **Special Conditions**

Part I.B.1: 95% Capacity Reopener

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-200 B.4 for all POTW and PVOTW permits.

Part I.B.2: Operations and Maintenance Manual Requirement

Rationale: Required by Code of Virginia §62.1-44.19; Sewage Control and Treatment Regulations, 9 VAC 25-790; VPDES Permit Regulation, 9 VAC 25-31-190 E.

Part I.B.3: Licensed Operator Requirement

Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 C and the Code of Virginia § 54.1-2300 et seq., Rules and Regulations for Waterworks and Wastewater Works Operators (18 VAC 160-20-10 et seq.), require licensure of operators.

Part I.B.4: Reliability Class

Rationale: Required by Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities.

Part I.B.5: Sludge Use and Disposal

Rationale: VPDES Permit Regulation, 9VAC25-31-100 P; 220 B 2; and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

Part I.B.6: Sludge Reopener

Rationale: Required by VPDES Permit Regulation, 9 VAC 25-31-220 C for all permits issued to treatment works treating domestic sewage.

Part I.B.7: Compliance Reporting

Rationale: Authorized by VPDES Permit Regulation, 9 VAC 25-31-190 J 4 and 220 I. This condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or a specific analytical method is required in order to assess compliance with a permit limitation or to compare effluent quality with a numeric criterion. The condition also establishes protocols for calculation of reported values.

The Quantification Levels (QLs) given for BOD₅, TSS, and ammonia (as N) are standard Agency prescribed QLs used to identify the quantifiable concentration of a particular pollutant in an effluent (Guidance Memo 10-2003). The BOD₅ QL of 2 mg/L was added for consistency with recently adopted VPDES General Permit regulations.

Part I.B.8: Materials Handling and Storage

Rationale: 9 VAC 25-31-50 A prohibits the discharge of any wastes into State waters unless authorized by permit. Code of Virginia §62.1-44.16 and 62.1-44.17 authorizes the Board to regulate the discharge of industrial waste or other waste.

Part I.C.9: Reopeners

Rationale:

- a. Section 303(d) of the Clean Water Act requires that total maximum daily loads (TMDLs) be developed for streams listed as impaired. This special condition is to allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The re-opener recognizes that, according to section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed if they are the result of a TMDL, basin plan, or other wasteload allocation prepared under section 303 of the Act.

- b. 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.
- c. 9 VAC 25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

Part I.B.10: Indirect Dischargers

Rationale: Required by VPDES Permit Regulation, 9VAC25-31-200 B 1 and B 2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

Part I.B.11: CTC, CTO Requirement

Rationale: Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9 VAC 25-790. 9 VAC 25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade.

Part I.B.12: Facility Closure

Rationale: Code of Virginia § 62.1-44.19 of the State Water Control Law. This condition establishes the requirement to submit a closure plan for the wastewater treatment facility if the treatment facility is being replaced or is expected to close.

Part I.B.13: Feasibility Analysis Requirement

Rationale: This special condition was carried forward from the previous permits. Due to concerns expressed at a public hearing held for the 1989 permit reissuance regarding the effect of the STP discharge on the water quality of Urbanna Creek and perceived negative effects if the STP design flow was increased, this special condition was created to require a detailed feasibility analysis of alternative wastewater treatment options prior to submission of an application for a design flow increase.

Part I.C Pretreatment Program

Rationale: VPDES Permit Regulation, 9 VAC 25-31-730 through 900, and 40 CFR Part 403 require certain existing and new sources of pollution to meet specified regulations.

Part II, Conditions Applicable to All VPDES Permits

The VPDES Permit Regulation at 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. Changes to Current Permit:

Part I.A.1 Table: Numerical Limitations and Monitoring Requirements

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
Flow (MGD)	NL – monitoring only	No Change	NA	No Change	NA	No Change	NL	No Change	Contin.	No Change	TIRE	No Change	NA
pH (SU)	NA	No Change	NA	No Change	6.0	No Change	9.0	No Change	1/Day	1 per Day	Grab	No Change	NA
BOD ₅	30 mg/L 11 kg/d	No Change	45 mg/L 17 kg/d	No Change	NA	No Change	NA	No Change	3/Week	1 per Week	8 HC	4HC	Changed sampling frequency in accordance with GM10-2003 – VPDES Permit Manual.
TSS	30 mg/L 11 kg/d	No Change	45 mg/L 17 kg/d	No Change	NA	No Change	NA	No Change	3/Week	1 per Week	8 HC	4HC	Changed sampling frequency in accordance with GM10-2003 – VPDES Permit Manual.
Ammonia as N (May – Oct)	3.83 mg/L	No Change	3.83 mg/L	No Change	NA	No Change	NA	No Change	1/Month	1 per Month	8 HC	4HC	Changed sampling frequency in accordance with GM10-2003 – VPDES Permit Manual.
Ammonia as N (Nov – Apr)	9.08 mg/L	No Change	9.08 mg/L	No Change	NA	No Change	NA	No Change	1/Month	1 per Month	8 HC	4HC	Changed sampling frequency in accordance with GM10-2003 – VPDES Permit Manual.
DO	5.0 mg/L	No Change	NA	No Change	3.2 mg/L	No Change	NA	No Change	1/Day	1 per Day	Grab	No Change	NA
Enterococci	35 N/100mL Geo. Mean	No Change	NA	No Change	NA	No Change	NA	No Change	3 days/week (10am-4pm)	2 days per week (10am -4pm)	Grab	No Change	Changed sampling frequency in accordance with GM10-2003 – VPDES Permit Manual.
Fecal Coliform	200 N/100mL Geo. Mean	No Change	NA	No Change	NA	No Change	NA	No Change	3 days/week (10am-4pm)	2 days per week (10am -4pm)	Grab	No Change	Changed sampling frequency in accordance with GM10-2003 – VPDES Permit Manual.

PARAM. CHANGED	DISCHARGE LIMITS CHANGED								MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	MONTHLY AVG.		WEEKLY AVG.		MIN		MAX		FREQ		SAMPLE TYPE		
	From	To	From	To	From	To	From	To	From	To	From	To	
Interim Ammonia (as N) (May – Oct)	7.30 mg/L	[deleted]	7.30 mg/L	[deleted]	NA	No Change	NA	No Change	1/Month	[deleted[8 HC	[deleted]	Monitoring was deleted in the 2007 permit authorized change to account for the new nutrient monitoring schema of the nutrient general permit and in response to nutrient policy changes.
Orthophosphate	NL	[deleted]	NA	[deleted]	NA	[deleted]	NA	[deleted]	2/Month	[deleted]	8 HC	[deleted]	
Total Phosphorus (as P)	NL	[deleted]	NA	[deleted]	NA	[deleted]	NA	[deleted]	2/Month	[deleted]	8 HC	[deleted]	
Total Phosphorus - Monthly (lb/mo)	NA	[deleted]	NA	[deleted]	NA	[deleted]	NL	[deleted]	1/Month	[deleted]	Calcul ated	[deleted]	
Total Phosphorus – Calendar Year (lb/yr)	NA	[deleted]	NA	[deleted]	NA	[deleted]	91	[deleted]	1/Year	[deleted]	Calcul ated	[deleted]	
Total Phosphorus – Year to date (lb/ yr)	NA	[deleted]	NA	[deleted]	NA	[deleted]	NL	[deleted]	1/Year	[deleted]	Calcul ated	[deleted]	
Total Nitrogen (as N)	NL	[deleted]	NA	[deleted]	NA	[deleted]	NA	[deleted]	2/Month	[deleted]	8 HC	[deleted]	
Total Nitrogen – Monthly (lb/mo)	NA	[deleted]	NA	[deleted]	NA	[deleted]	NL	[deleted]	1/Month	[deleted]	Calcul ated	[deleted]	
Total Nitrogen – Calendar Year (lb/yr)	NA	[deleted]	NA	[deleted]	NA	[deleted]	1,218	[deleted]	1/Year	[deleted]	Calcul ated	[deleted]	
Total Nitrogen – Year to date (lb/yr)	NA	[deleted]	NA	[deleted]	NA	[deleted]	NL	[deleted]	1/Month	[deleted]	Calcul ated	[deleted]	
Total Kjeldahl Nitrogen (as N)	NL	[deleted]	NA	[deleted]	NA	[deleted]	NA	[deleted]	2/Month	[deleted]	8 HC	[deleted]	
Nitrate plus Nitrite (as N)	NL	[deleted]	NA	[deleted]	NA	[deleted]	NA	[deleted]	2/Month	[deleted]	8 HC	[deleted]	

Other Changes

2007	2012	Special Condition Changed	Reason for Change	Date
Permit Cover	Permit Cover	Intro Paragraph	Revised to reflect January 27, 2010 Permit Manual.	9/2011
Permit Cover	Permit Cover	City	City line item removed since in the Commonwealth of Virginia cities are independent of counties.	
Permit Cover	Permit Cover	County	Added "County" to Middlesex.	
Permit Cover	Permit Cover	Address	Added zip code.	
Permit Cover	Permit Cover	Signatory Authority	Revised to reflect Agency Policy 2-09.	
Part I.A.1	Part I.A.1	Effluent Limitation and Monitoring Opening Paragraph	Revised to reflect January 27, 2010 Permit Manual.	
[new]	Part I.A.1 Definition	4HC	Sample type acronym defined.	
Part I.A.1 Footnote (1)	Part I.A.1 Footnote (a)	Flow Design	Reference to additional flow requirements in the special conditions updated.	
Part I.A.1 Footnote (7)	Part I.A.1 Footnote (b)	Significant digits footnote	Revised to reflect January 27, 2010 Permit Manual.	
[new]	Part I.A.1 Footnote (c)	Watershed General Permit Reference	Revised to reflect GM07-2008, Amendment 2.	
Part I.A.1 Definition	[deleted]	"2/Month"	Nutrient parameters requiring monitoring 2/Month have been removed from the individual permit. Explanation no longer necessary.	
Part I.A.1 Footnote (2)	[deleted]	Calculation of Total Nitrogen	Nutrient monitoring and reporting no longer included in the individual permit, therefore the footnotes are unnecessary. Reflects January 27, 2010 Permit Manual and GM07-2008, Amendment 2.	
Part I.A.1 Footnote (3)	[deleted]	Nutrient Reporting Condition Reference		
Part I.A.1 Footnote (4)	[deleted]	Compliance Schedule Reference	Removed because the final compliance was achieved during the 2007 permit term	
Part I.A.1 Footnote (5)	[deleted]	Monitoring using EPA approved method	Condition is outdated with lab VELAP certification requirement in Part II.A.4.	
Part I.A.1 Footnote (6)	[deleted]	Monitoring and reporting expectation	Originally included to clarify that monitoring and reporting is expected prior to the final limitation becoming effective. All limitations in the permit are final, therefore this footnote is unnecessary.	
Part I.A.2	Part I.A.2	No Solids	No change.	
Part I.A.3	Part I.A.3	85% Removal	No change.	
Part I.A.4.	[deleted]	Sampling Location	Removed as this condition is not included in DEQ guidance and the compliance point/ sampling location is defined in the O&M Manual.	
Part I.B	[deleted]	Schedule of Compliance	Limitations became effective in 2011.	
Part I.C.1	Part I.B.1	95% Capacity Reopener	Revised to specify "DEQ" Piedmont Regional Office.	
Part I.C.2	Part I.B.2	Operations & Maintenance Manual	Revised to reflect January 27, 2010 Permit Manual.	
Part I.C.3	Part I.B.3	Licensed Operator Requirement	No change.	
Part I.C.4	Part I.B.4	Reliability Class	No change.	
Part I.C.5	Part I.B.5	Sludge Use and Disposal	Revised to reflect January 27, 2010 Permit Manual.	
Part I.C.6	Part I.B.6	Sludge Reopener	No change.	
Part I.C.7	Part I.B.7	Compliance Reporting	Revised to reflect January 27, 2010 Permit Manual. Added QLs for BOD ₅ and TSS and removed QL for nutrient parameters for which monitoring no longer required in the individual permit.	
Part I.C.8	Part I.B.8	Materials Handling/Storage	Revised to reflect January 27, 2010 Permit Manual.	
Part I.C.9 Part I.C.12	Part I.B.9	Reopeners	Revised to reflect GM07-2008, Amendment 2.	
Part I.C.10	Part I.B.10	Indirect Dischargers	No change.	
Part I.C.11	Part I.B.11	CTC, CTO Requirement	Reflects January 27, 2010 Permit Manual and GM07-2008, Amendment 2.	
[new]	Part I.B.12	Facility Closure	New, reflects PRO Staff Decisions (December 2, 2008).	
Part I.C.13	Part I.B.13	Feasibility Analysis	Revised to specify DEQ "Piedmont Regional Office".	

Part I.C.14	[deleted]	Nutrient Reporting Calculations	Removed in accordance with GM07-2008, Amendment 2.	9/2011
Part I.C.15	[deleted]	General Permit Controls		
Part I.C.16	[deleted]	Interim Optimization Plan		
Part I.D	Part I.C	Pretreatment	Revised per January 27, 2010 Permit Manual and PRO boilerplate. Specifically, Parts I.D: 2.a(1), 2.a(9), 2.e, 2.j, 5.a, 5.c, 7, 8, 10, 11, 12, 13, and 14 were revised to clarify reporting time frames, requirements, and deadlines and to address non-discharging pretreatment facilities. Additionally, acronyms were spelled out with their first use. With the exception of the annual report (which requires an original signature), electronic submittals of pretreatment requirements are preferred.	
[new]	Part II.A.4	Monitoring	Incorporated to reflect change in laboratory accreditation requirements.	

Changes from the draft permit to final permit as a Result of Owner Comments

PARAM. CHANGED	MONITORING REQUIREMENTS CHANGED				REASON FOR CHANGE
	FREQ		SAMPLE TYPE		
	From	To	From	To	
BOD ₅	1 per Week	1 per Week	4 HC	8 HC	The owner requested that the sample type for BOD ₅ , TSS, and Ammonia be reverted back to 8 hour composites instead of 4 hour composites to be consistent with the sampling requirements listed in the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed. The sample type is considered more stringent and therefore, the agency does not object to the change.
TSS	1 per Week	1 per Week	4 HC	8 HC	
Ammonia as N (May – Oct)	1 per Month	1 per Month	4 HC	8 HC	
Ammonia as N (Nov – Apr)	1 per Month	1 per Month	4 HC	8 HC	
Part I.A.1 Definition	4 HC changed to 8 HC as a result of owner comments to match sample type with the Watershed General Permit requirements.				

22. Variances/Alternate Limits or Conditions: None
23. Regulation of Users: 9VAC25-31-280 B.9: Not applicable because this is a public treatment works that is a subdivision of the Commonwealth of Virginia.
24. Public Notice Information required by 9 VAC 25-31-280 B:

All pertinent information is on file and may be inspected or copied by contacting

Ms. Jaime Bauer
Virginia DEQ - Piedmont Regional Office
4949-A Cox Road
Glen Allen, Virginia 23060-6296
Telephone Number: 804-527-5015
Facsimile Number: 804-527-5106
Email: jaime.bauer@deq.virginia.gov

DEQ accepts comments and requests for public hearing by e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals

must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit. The public may review the draft permit and application at the DEQ Piedmont Regional Office by appointment or may request copies of the documents from the contact person listed above.

Newspaper:	<u>Southside Sentinel</u>
Dates Published:	<u>March 1, 2012 and March 8, 2012</u>
Public Comment Period:	<u>Start: March 1, 2012 End: April 2, 2012</u>
Public Notice Comments:	<u>None Received.</u>

25. Additional Comments:

a. Previous Board Action: None

b. Staff Comments:

- The application was originally received on June 24, 2011 and deemed complete upon receipt of additional information on July 5, 2011 and July 21, 2011.
- Financial assurance does not apply to this facility because it is a publicly owned treatment works.
- The 2011 permit fees were paid on September 7, 2011.
- This project is not considered to be controversial.
- The facility is not yet enrolled in the eDMR program. The facility was notified on September 26, 2011 of the agency's intention to not issue a hard copy DMR. The permittee responded referencing a letter dated March 15, 2010 in which HRSD notified DEQ that they were in the process of replacing their electronic environmental management system (LIMS) with a new system that will be compatible with eDMR. Conversion to the new system is expected to be complete by the end of 2012. Upon completion, HRSD will enroll in the eDMR program.
- This facility is not a participant in the Virginia Environmental Excellence Program (VEEP).
- Registration for coverage under the VAR05 ISWGP is applicable to treatment works treating domestic sewage (TWTDS) facilities with a design flow of 1.0 MGD or more. Because this facility is permitted to discharge less than 1.0 MGD in accordance with its design flow, the VAR05 ISWGP is not applicable at this time.
- A reduced monitoring evaluation was considered in accordance with GM10-2003. Due to the seasonal tiered limitation for ammonia, reduced monitoring is not appropriate for this parameter. Also, monitoring reductions for bacteria are not appropriate when using alternate disinfection. TSS and BOD₅ were considered for reduced monitoring. In the 2007 permit, the monitoring frequency for TSS and BOD₅ was set at a frequency of 3 samples per week in response to owner comments requesting that the monitoring frequencies be set as specified in the June 2004 VPDES Permit Manual rather than the agency established policy that required less frequent monitoring. The VPDES Permit Manual has since been revised and the 2007 monitoring frequency is inconsistent with the VPDES Permit Manual (GM10-2003) Sampling Schedule Table for a plant of this size. Guidance establishes a monitoring frequency for these parameters at one sample per week. Therefore, the revision of the monitoring frequency in accordance with the 2010 VPDES Permit Manual represents a reduction in monitoring frequency at this time. Reduced monitoring for dissolved oxygen can be considered on a case-by-case basis and was

not evaluated at this time. The 2007 permit included new dissolved oxygen limitations that became effective after a schedule of compliance. To ensure that the effluent was able to meet the limitations, plant equipment and operations were modified. Additionally, less than 3 years of effluent data for dissolved oxygen exists. It is the best professional judgment of staff that the monitoring frequency for dissolved oxygen remain at once per day until such time that additional data may be collected.

- The permittee is considered a significant discharger of nutrients to the Chesapeake Bay watershed because the discharge is east of the fall line and the plant design flow is greater than 100,000 gallons per day; therefore, the facility is subject to the requirements of the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed (VAN020034). The Watershed General Permit allows the aggregation of allocations and permitted design capacities between facilities of common ownership or operation in the same tributary. An owner or operator of two or more facilities located in the same tributary may apply for and receive an aggregated waste load allocation for total nitrogen and an aggregated waste load allocation for total phosphorus for multiple facilities reflecting the total of the water quality-based total nitrogen and total phosphorus waste load allocations established for such facilities individually. However, there are no other facilities in the Rappahannock river basin owned by HRSD, therefore, only the Urbanna STP is covered under VAN020034. The Total Nitrogen and Total Phosphorus calendar year load limits assigned to this facility are included in the current Registration List for the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Dischargers and Nutrient Trading in the Chesapeake Watershed in Virginia.
 - While this facility has an approved pretreatment program, it is operated under the control of the HRSD Atlantic facility, and the DEQ program administration is handled by the Tidewater Regional Office. The HRSD pretreatment program is currently implemented only for facilities in the DEQ-Tidewater Region as the Urbanna STP has no industrial users at the time of this draft. The Special Condition for pretreatment requires that HRSD notify DEQ-PRO within five days of receiving process flow from a SIU and must implement the pretreatment program at that time.
 - c. **EPA Comments:** Because the discharge is included in the Chesapeake Bay watershed TMDL, the draft permit was sent to EPA for review. On January 18, 2012, EPA staff provided an email indicating no objections to the permit.
 - d. **VDH Comments:** The application was sent to VDH Office of Drinking Water and Division of Shellfish Sanitation on 8/22/11. Correspondence received from VHD-OWE on 8/25/11 indicating that there are no public water supply intakes within 15 miles of the discharge and that they do not object to the permit. DSS provided a memorandum dated 9/19/11 stating that the project is located in condemned shellfish growing waters, and the discharge will not cause an increase in the size or type of closure.
 - e. **Owner Comments:** The owner submitted comments dated February 13, 2012 and concurred with the draft permit on February 17, 2012 via email. See **Attachment 10**.
 - f. **Public Comments:** No public comments were received.
 - g. **Other Agency Comments:** None.
 - h. **Planning Conformance Statement:** In a memo dated December 2, 2011, DEQ senior planning staff confirmed that, "The discharge is in conformance with the existing planning documents for the area."
26. 303(d) Listed Segments (TMDL): During the 2010 305(b)/303(d) Water Quality Assessment, the receiving stream was assessed as a Category 5A water ("A Water Quality Standard is not attained. The water is impaired or threatened for one or more designated uses by a pollutant(s) and requires a TMDL (303d list).") The Aquatic Life Use is impaired due to low dissolved oxygen in the mesohaline Rappahannock River estuary (RPPMH). The Recreation and Wildlife Uses were fully supporting. The Fish Consumption Use was fully supporting with observed effects due to exceedances of

screening values for PCBs and arsenic in fish tissue. (See **Attachment 9** – Water Quality Assessment Fact Sheet.). Compliance with the dissolved oxygen monthly and instantaneous minimum limitations of 5.0 mg/L and 3.2 mg/L in this permit will neither cause nor contribute to the impairment.

This facility discharges directly to Urbanna Creek in the Chesapeake Bay watershed in segment RPPMH. The receiving stream has been addressed in the Chesapeake Bay TMDL, approved by EPA on December 29, 2010. The TMDL addresses dissolved oxygen (DO), chlorophyll a, and submerged aquatic vegetation (SAV) impairments in the main stem Chesapeake Bay and its tidal tributaries by establishing non-point source load allocations (LAs) and point-source waste load allocations (WLAs) for Total Nitrogen (TN), Total Phosphorus (TP) and Total Suspended Solids (TSS) to meet applicable Virginia Water Quality Standards contained in 9VAC25-260-185. This facility is considered a Significant Chesapeake Bay wastewater discharge, and has been assigned a TN WLA of 1,218 pounds per year, a TP WLA of 91 pounds per year, and a TSS WLA of 9,136.68 pounds per year.

Implementation of the Chesapeake Bay TMDL is currently accomplished in accordance with the Commonwealth of Virginia's Phase I Watershed Implementation Plan (WIP), approved by EPA on December 29, 2010. The approved WIP recognizes that the TMDL nutrient WLAs for Significant Chesapeake Bay wastewater dischargers are set in two regulations: 1) the Water Quality Management Planning Regulation (9VAC25-720); and 2) the "General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed of Virginia" (9VAC25-820). The WIP further outlines that since TSS discharges from wastewater facilities represent an insignificant portion of the Bay's total sediment load, they may be considered in the aggregate. The WIP establishes that wastewater discharges with technology-based TSS limits are considered consistent with the TMDL.

40 CFR 122.44(d)(1)(vii)(B) requires permits to be written with effluent limits necessary to meet water quality standards and to be consistent with the assumptions and requirements of applicable WLAs. DEQ has provided coverage under the VPDES Nutrient General Permit (GP) for this facility under permit VAN020034. The requirements of the Nutrient GP currently in effect for this facility are consistent with the Chesapeake Bay TMDL. This individual permit includes technology-based TSS limits of 30 mg/L that are also consistent with the Chesapeake Bay TMDL and WIP. In addition, the individual permit has limits of 30 mg/L BOD₅ and 5.0 mg/L DO. Given these limits, this facility can neither cause nor contribute to an observed violation of the standards, and is consistent with the TMDL.

The Shellfish Use is considered to be removed due to a prohibition zone issued by the VDH Division of Shellfish Sanitation. The facility was not addressed in the Urbanna Creek Shellfish TMDL (approved by EPA on 11/15/2005 and the SWCB on 9/27/2006) because the facility is located within a prohibited zone where the shellfish use is considered removed.

27. Summary of attachments to this Fact Sheet:
- | | |
|---------------|--|
| Attachment 1 | Flow Frequency Memo |
| Attachment 2 | Facility Diagram |
| Attachment 3 | Topographic Map |
| Attachment 4 | Ambient Water Quality Data |
| Attachment 5 | Site Visit Memo |
| Attachment 6 | Effluent data |
| Attachment 7 | Mixing Recommendations |
| Attachment 8 | Reasonable Potential Analysis and Limitation Development |
| Attachment 9 | 303(d) - TMDL Fact Sheets |
| Attachment 10 | Owner Comments and Resolution |

Attachment 1 – Flow Frequency Memo

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
4949-A Cox Road Glen Allen, Virginia 23060

SUBJECT: Flow Frequency Determination / 303(d) Status
HRSD Town of Urbanna STP – VA0026263

TO: Jaime Bauer

FROM: Jennifer Palmore, P.G.

DATE: September 1, 2011

COPIES: File

The Hampton Roads Sanitation District (HRSD)'s Town of Urbanna sewage treatment plant discharges to Urbanna Creek in Middlesex County, VA. The outfall is located at rivermile 3-URB001.47. Flow frequencies have been requested at this site for use by the permit writer in developing effluent limitations for the VPDES permit.

Urbanna Creek at the discharge point is tidally influenced. Flow frequencies cannot be determined for tidal waters therefore, the previously determined dilution ratios should be used to evaluate the effluent's impact on the water body. The Water Quality Standards designate the Rappahannock River estuary below buoy 6 as estuarine; therefore the saltwater criteria should be applied.

During the 2010 305(b)/303(d) Water Quality Assessment, the receiving stream was assessed as a Category 5A water ("A Water Quality Standard is not attained. The water is impaired or threatened for one or more designated uses by a pollutant(s) and requires a TMDL (303d list).") The Aquatic Life Use is impaired due to low dissolved oxygen in the mesohaline Rappahannock River estuary (RPPMH). The applicable fact sheet is attached. The Recreation and Wildlife Uses were fully supporting. The Fish Consumption Use was fully supporting with observed effects due to exceedances of screening values for PCBs and arsenic in fish tissue. The Shellfish Use is considered to be removed due to a prohibition zone issued by the VDH Division of Shellfish Sanitation.

HRSD Urbanna was included in the Chesapeake Bay TMDL, which addressed dissolved oxygen and SAV impairments in the mainstem Bay and its tidal tributaries. The TMDL was approved by the EPA on 12/29/2010. The facility is considered a significant wastewater discharger and was assigned individual wasteload allocations for total nitrogen, total phosphorus, and total suspended solids (TSS). The nutrient allocations are administered through the Watershed Nutrient General Permit; the TSS allocations are considered aggregated and facilities with technology-based TSS limits are considered to be in conformance with the TMDL.

The Urbanna Creek Shellfish Bacterial TMDL was approved by the EPA on 11/15/2005 and by the SWCB on 9/27/2006. The facility was not addressed in the TMDL because the facility is located within a prohibited zone where the shellfish use is considered removed.

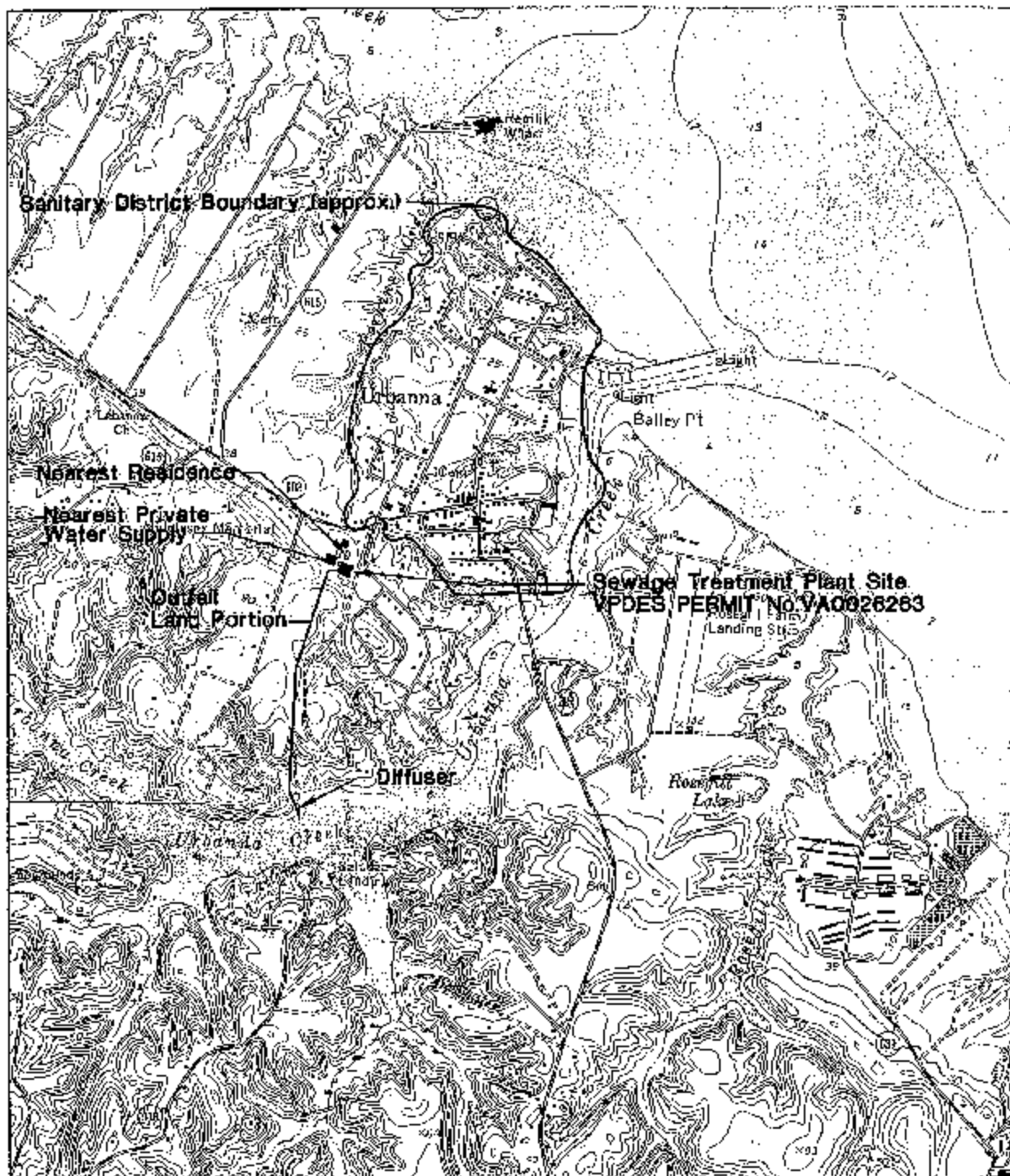
Water quality data from monitoring station 3-URB001.50 is attached. The station is located on the south side of Urbanna Creek at the DGIF boat ramp near the end of Route 418. It is directly across Urbanna Creek from the outfall.

During the previous permitting cycle, Urbanna Creek was considered a Tier 2 water. Although the Rappahannock mesohaline estuary is impaired for low dissolved oxygen, monitoring in Urbanna Creek shows acceptable local conditions (3/78 for dissolved oxygen at 3-URB001.50) and no additional data is available to indicate Tier 1 conditions, therefore the Tier 2 status remains appropriate.

If you have any questions concerning this analysis, please let me know.

Attachment 2 – Facility Diagram

Attachment 3 – Topographic Map



Location Map
for
Town of Urbanna STP - Middlesex County

April 2003

Urbanna, VA

Attachment 4 – Ambient Water Quality Data

Station ID	Collection Date	Depth Desc	Depth (m)	Temp (°C)	Field pH (SU)	Do Probe (mg/L)	Do Winkler	Fdt Do Optical	Salinity (ppm)	Secchi Depth (m)
3-URB001.50	8/18/1997	S	0.3	29.75	7.31	5.57			13.9	
3-URB001.50	10/15/1997	S	0.3	21.13	7.36	7.28			17	
3-URB001.50	12/16/1997	S	0.3	5.54	7.8	8.66			16.6	
3-URB001.50	2/5/1998	S	0.3	5.92	7.01	11.3			2.8	
3-URB001.50	4/15/1998	S	0.3	15.8	8.51	10.32			7	
3-URB001.50	6/10/1998	S	0.3	21.93	7.57	7.73			6.8	
3-URB001.50	7/1/1998	S	0.3	28.35		7.57			10.6	
3-URB001.50	7/1/1998	M	1	28.11	7.68	5.6			10.8	0.4
3-URB001.50	7/1/1998	B	1.3	27.58		2.34			11.2	
3-URB001.50	8/5/1998	B	2.1	27.06	7.57	5.1			11.7	
3-URB001.50	8/5/1998	S	0.3	27.81	7.99	7.76			11.3	
3-URB001.50	8/5/1998	M	1	27.43	7.9	7.14			11.4	0.8
3-URB001.50	8/19/1998	S	0.3	29.07	8.12	9.33			13.2	
3-URB001.50	9/1/1998	S	0.3	28.85	8	6.55			15.9	
3-URB001.50	9/1/1998	M	1	28.83	7.99	6.81			15.9	0.8
3-URB001.50	9/1/1998	B	2	28.73	7.88	6.3			15.9	
3-URB001.50	10/7/1998	B	2.3	20.86	7.69	5.59			17.7	
3-URB001.50	10/7/1998	M	2	20.94	7.8	6.37			17.5	
3-URB001.50	10/7/1998	M	1	21.12	7.98	7.18			17.3	0.7
3-URB001.50	10/7/1998	S	0.3	21.44	8.1	7.91			17.1	
3-URB001.50	10/15/1998	S	0.3	18.91	7.63	7.76			14.9	
3-URB001.50	12/14/1998	S	0.3	6.76	7.16	10.14			10.8	
3-URB001.50	2/16/1999	S	0.3	6.93	7.32	10.06			17.9	
3-URB001.50	4/13/1999	S	0.3	15.5	7.1	7.82			14.5	
3-URB001.50	5/11/1999	S	0.3	22.95	7.31	6.69			15.3	
3-URB001.50	5/11/1999	B	1.6	20.77	6.72	3.42			15	
3-URB001.50	5/11/1999	S	1	22.35	7.03	5.6			14.3	0.5
3-URB001.50	6/10/1999	S	0.3	27.75	7.35	6.02			15.9	
3-URB001.50	6/23/1999	S	0.3	25.12	8.24	7.76			15.7	
3-URB001.50	6/23/1999	B	16	23.22	8.24	5.21			16.9	
3-URB001.50	6/23/1999	S	1	24.66	8.27	7.45			16.2	0.6
3-URB001.50	7/21/1999	S	0.3	29.42	7.65	6.48			18.8	
3-URB001.50	7/21/1999	S	1	29.34	7.56	6.1			19.1	0.7
3-URB001.50	8/5/1999	S	0.3	30.62	7.76	6.93			17.5	
3-URB001.50	8/5/1999	B	1.5	29.38	7.39	4			18.2	
3-URB001.50	8/5/1999	S	1	29.57	7.64	5.74			18	0.6
3-URB001.50	8/12/1999	S	0.3	28.42	7.9	7			18.4	
3-URB001.50	9/9/1999	B	1.7	24.88	7.33	3.77			19.7	
3-URB001.50	9/9/1999	S	1	25.63	7.78	5.37			18.1	0.8
3-URB001.50	9/9/1999	S	0.3	26.21	8.09	10.92			17.8	
3-URB001.50	10/5/1999	S	1	21.7	7.9	9.04			16	0.8
3-URB001.50	10/5/1999	S	0.3	21.53	7.9	9.18			15.5	
3-URB001.50	10/26/1999	S	0.3	14.45	7.81	8.14			15.3	
3-URB001.50	12/27/1999	S	0.3	4.93	7.56	11.05			14.8	
3-URB001.50	2/15/2000	S	0.3	6.19	7.91	10.1			16	
3-URB001.50	4/11/2000	S	0.3	17.32	7.32	6.96			14	
3-URB001.50	5/25/2000	S	0.3	23.54	7.4	7.21			11.9	
3-URB001.50	5/25/2000	S	1	22.98	7.29	6.09			12.4	0.6
3-URB001.50	6/12/2000	S	0.3	26.07	7.21	6.33			12.1	
3-URB001.50	6/28/2000	B	1	27.59	7.17	4.1		6	13.2	0.8
3-URB001.50	6/28/2000	S	0.3	27.57	7.24	4.88			13.1	
3-URB001.50	7/25/2000	B	1.2	24.44	7.14	4.25			10.9	
3-URB001.50	7/25/2000	S	1	24.39	7.2	4.62			11	0.9
3-URB001.50	7/25/2000	S	0.3	24.37	7.2	4.54			10.9	
3-URB001.50	8/16/2000	S	0.3	26.64	7.95	7.4			9.6	
3-URB001.50	8/30/2000	S	1	26.7	7.74	6.78			10.4	1
3-URB001.50	8/30/2000	B	1.2	26.69	7.74	6.78			10.4	
3-URB001.50	8/30/2000	S	0.3	26.72	7.86	7.55			10	
3-URB001.50	9/11/2000	S	0.3	25.08	7.81	8.42			9.2	
3-URB001.50	9/11/2000	B	1	25.36	7.26	4.04			11.3	0.6
3-URB001.50	10/2/2000	S	0.3	19.47	7.64	8.72			9.54	
3-URB001.50	10/25/2000	B	1.4	18.23	7.55	5.92			14.22	
3-URB001.50	10/25/2000	S	0.3	16.89	7.72	7.61			12.7	
3-URB001.50	10/25/2000	S	1	17.79	7.64	6.5			13.49	1.4
3-URB001.50	12/11/2000	S	0.3	4.58	8.19	11.98			14.2	
3-URB001.50	2/13/2001	S	0.3	6	7.49	11.15			13.4	
3-URB001.50	4/5/2001	S	0.3	10.79	7.26	9.4			11.07	
3-URB001.50	1/17/2007	S	0.3	8.4	7.6	11.8			10.9	
3-URB001.50	3/28/2007	S	0.3	17.4	8.3	11.8			9	
3-URB001.50	5/10/2007	S	0.3	22.4	7.9	8.8			8	
3-URB001.50	7/17/2007	S	0.3	29.9	7.9			8	13.3	
3-URB001.50	9/18/2007	S	0.3	22.1	7.9	6.4			14.9	
3-URB001.50	11/14/2007	S	0.3	13.6	8	11.9			16.2	

3-URB001.50	1/16/2008 S	0.3	6.9	7.9	11.2	17.6
3-URB001.50	3/10/2008 S	0.3	10	7.9	10.2	12.5
3-URB001.50	5/19/2008 S	0.3	20.9	7.7	8.1	8.5
3-URB001.50	7/21/2008 S	0.3	31.2	8	8.6	12.1
3-URB001.50	9/22/2008 S	0.3	22.3	7.6	6.3	13.6
3-URB001.50	11/18/2008 S	0.3	10.5	7.8	10.3	15
90th Percentile			29.1	8.1		
10th percentile			6.9	7.2		
Average						13.7

Winter Ambient Temperature

Station ID	Collection Date	Depth Desc	Temp (°C)
3-URB001.50	12/16/1997 S		5.54
3-URB001.50	2/5/1998 S		5.92
3-URB001.50	4/15/1998 S		15.8
3-URB001.50	12/14/1998 S		6.76
3-URB001.50	2/16/1999 S		6.93
3-URB001.50	4/13/1999 S		15.5
3-URB001.50	12/27/1999 S		4.93
3-URB001.50	2/15/2000 S		6.19
3-URB001.50	4/11/2000 S		17.32
3-URB001.50	12/11/2000 S		4.58
3-URB001.50	2/13/2001 S		6
3-URB001.50	4/5/2001 S		10.79
3-URB001.50	1/17/2007 S		8.4
3-URB001.50	3/28/2007 S		17.4
3-URB001.50	11/14/2007 S		13.6
3-URB001.50	1/16/2008 S		6.9
3-URB001.50	3/10/2008 S		10
3-URB001.50	11/18/2008 S		10.5
90th Percentile			16.3

Attachment 5 – Site Visit Memo



MEMORANDUM
DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office

4949-A Cox Road; Glen Allen, VA 23060-6296

804/527-5020

TO: Sharon Nicklas, HRSD

FROM: Meredith Williams

DATE: October 28, 2011

SUBJECT: VA0026263 HRSD-Town of Urbanna STP- Recon Inspection Report

COPY: DEQ-ECM file

On October 20, 2011 (1025-1100) Heather Horne and I accompanied DEQ permit writer, Jaime Bauer on a site visit to the subject facility which will be undergoing permit reissuance in the near future. Overall, the plant appeared to be very well maintained and was producing clear effluent. No lab data was reviewed during this site visit.

Pump Stations: No pump stations were inspected during this inspection. There were no unusual conditions reported at the time of inspection.

Screening/Grit Removal: New screening/grit channel was installed since the previous inspection.

Equalization Basin: Two EQ basins are maintained; only one was in use at the time of inspection. Dedicated blowers continuously provide diffused air to the EQ basin for mixing. High and low level alarms are present. The basins appeared to be in good condition at the time of inspection.

Splitter Box: From the EQ basin, water is pumped to a splitter box before entering the dual train aeration basins.

Activated Sludge Aeration: Three blowers (all operational) provide continuous aeration to the two dual train units. Flow appeared to be equally divided between the two units. The bulkhead wall between the aeration basin and digester were repaired since the previous inspection. Aeration appeared to be adequate.

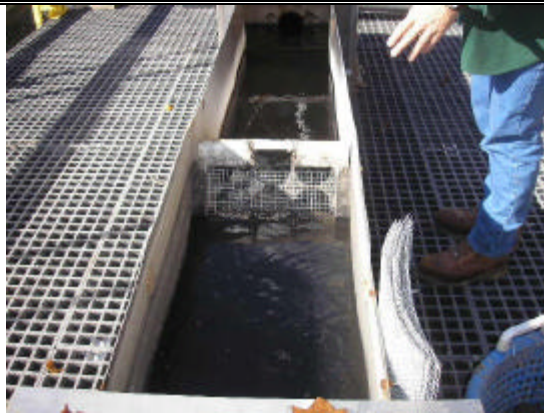
Secondary Clarifiers: Two dual train clarifiers are present. Effluent weirs are reportedly cleaned weekly. When cleaning clarifiers, wash water is directed to the EQ basin.

Aerobic Digestion: The two dual train digesters treat activated sludge. Decant is returned to the EQ basin as needed. As noted above, the bulkhead wall between the aeration basin and digester was repaired since the previous inspection.

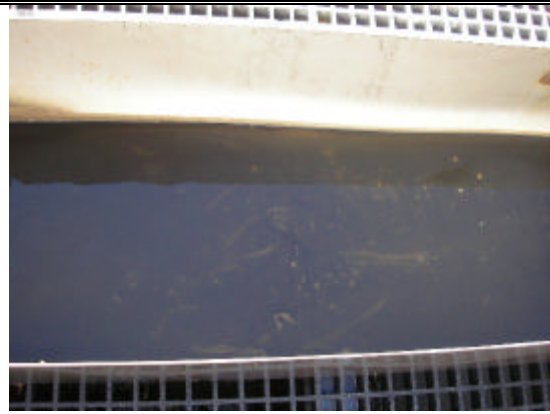
Sludge Drying Beds: Two sludge drying beds receive sludge from the treatment trains. Both beds are covered. Underflow is returned to the EQ basins. Solids from the drying beds are landfilled. Both beds appeared to be in good condition.

UV Disinfection (Trojan UV2000): Two UV units are present with 4 assemblies each (2 bulbs each assembly). The units operate in series. Both units were in operation at the time of inspection. Routine cleaning occurs weekly. Final effluent from the UV system appeared clear.

Discharge Structure: The final effluent enters an aboveground storage tank before being pumped to a submerged outfall in Urbanna Creek (not viewed).



Photograph 1: Plant headworks/screening



Photograph 2: Grit channel



Photograph 3: EQ basin (1 of 2 in use)



Photograph 4: EQ basin currently off-line



Photograph 5: Old plant headworks will be removed in the near future



Photograph 6: Splitter box



Photograph 7: 1 of 2 clarifiers; weirs are cleaned daily



Photograph 8: 1 of 2 digesters; decant from digesters is pumped back to EQ basin



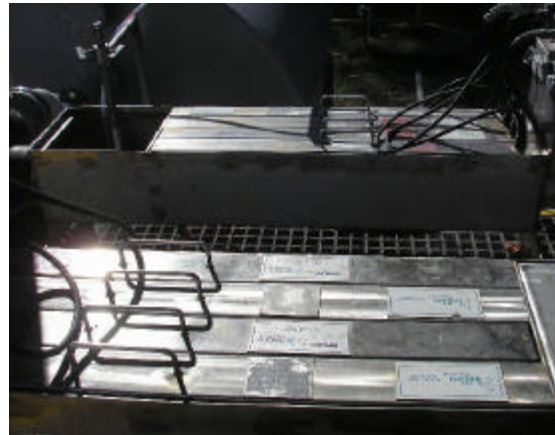
Photograph 9: 1 of 2 aeration tanks



Photograph 10: 1 of 2 aeration tanks



Photograph 11: 2 of 2 digesters; repaired wall



Photograph 12: UV system (all flow goes through 2 banks); bulbs cleaned 1/week



Photograph 13: Sampling point at end of UV treatment



Photograph 14: 1 of 2 drying beds



Photograph 15: 2 of 2 drying beds

Attachment 6 – Effluent Data

	FLOW (MGD)		pH (SU)		BOD5 (mg/L)	TSS (mg/L)	COLIFORM, FECAL (N/100 mL)
Received Date	Quant Avg	Quanti Max	Conc Min	Conc Max	Conc Avg	Conc Avg	Conc Avg
14-Feb-07	0.04	0.05	7	7.7	7	12	1
13-Mar-07	0.05	0.1	7.3	7.7	8	9.2	2
11-Apr-07	0.04	0.06	7.3	8.5	3	4.1	1
11-May-07	0.05	0.1	7.5	8.5	5	7.1	2
12-Jun-07	0.05	0.09	7	8	10	12	8
11-Jul-07	0.05	0.07	7.6	8.1	4	11	3
13-Aug-07	0.06	0.08	7.7	8.3	6	11	3
11-Sep-07	0.06	0.08	7.6	8	3	11	3
11-Oct-07	0.05	0.08	7.7	8	3	8.5	3
14-Nov-07	0.05	0.07	7.6	8	4	9.4	9
11-Dec-07	0.05	0.12	7.7	8	4	6.8	7
11-Jan-08	0.04	0.05	7.5	7.9	2	3.4	2
12-Feb-08	0.04	0.05	7.5	7.9	4	5.9	3
11-Mar-08	0.041	0.054	7	7.9	3	6.4	2
11-Apr-08	0.043	0.08	7.6	7.8	5	7.9	2
13-May-08	0.047	0.055	7.5	7.9	6	10	2
12-Jun-08	0.056	0.074	7.6	8	4	9	2
11-Jul-08	0.055	0.065	7.7	8.1	3	7.1	1
12-Aug-08	0.056	0.104	7.7	8	5	15	2
11-Sep-08	0.056	0.077	7.7	8	4	12	2
14-Oct-08	0.056	0.087	7.5	7.9	3	9.1	3
12-Nov-08	0.048	0.059	7.7	8.2	4	8.4	3
11-Dec-08	0.056	0.115	7.8	8	9	15	15
15-Jan-09	0.041	0.06	7.6	8.1	3	6.1	2
11-Feb-09	0.04	0.049	7.7	8	7	9.3	1
10-Mar-09	0.038	0.043	7.6	8.3	13	16	1
13-Apr-09	0.041	0.078	7.7	8	10	13	1
12-May-09	0.046	0.071	7.7	8.1	4	6.8	2
10-Jun-09	0.049	0.071	7.6	8.1	3	6.1	4
15-Jul-09	0.053	0.068	7.8	8.1	1	5.8	1
10-Aug-09	0.056	0.08	7.5	8.2	1	6.8	1
11-Sep-09	0.059	0.09	7.8	8	1	6.2	1
13-Oct-09	0.054	0.083	7.6	8	3	9.3	5
12-Nov-09	0.054	0.084	7.6	8	2	8.4	3
11-Dec-09	0.072	0.205	7.3	8.1	10	27	14
12-Jan-10	0.069	0.115	7.6	8.1	1	6.9	3
10-Feb-10	0.057	0.085	7.1	8.2	2	6.3	2
11-Mar-10	0.06	0.101	7.2	8.2	9	17	2
13-Apr-10	0.054	0.104	7.4	8.1	8	16	3
11-May-10	0.049	0.066	7.6	8.2	3	8.6	2
11-Jun-10	0.051	0.08	7.7	8.2	3	8.4	2
13-Jul-10	0.053	0.075	7.8	8.4	2	7.5	3
11-Aug-10	0.06	0.091	6.2	8.2	1	5.9	2
13-Sep-10	0.064	0.086	7.6	8.2	2	13	4
13-Oct-10	0.059	0.13	7.6	8.1	1	7.9	2
12-Nov-10	0.052	0.116	7.5	8	0	5.3	2
13-Dec-10	0.058	0.195	7.6	8	1	6.9	2
11-Jan-11	0.045	0.053	7.6	8.1	2	5.5	2
10-Feb-11	0.041	0.051	7.6	7.9	4	6.3	2
14-Mar-11	0.035	0.047	7.6	8	2	5.2	2
13-Apr-11	0.04	0.05	7.6	8	2	4.8	1
11-May-11	0.043	0.063	7.6	8.2	3	7.9	3
13-Jun-11	0.051	0.08	7.3	8.1	8	20	2
12-Jul-11	0.055	0.075	7.6	8.4	3	12	2
11-Aug-11	0.066	0.086	7.5	8	4	12	2
Average	0.05	0.08	7.52	8.07	4.15	9.37	2.95
90th Percentile			7.7	8.26			
10th Percentile			7.24	7.9			

	AMMONIA (mg/L)	ENTEROCOCCI (N/100 mL)	DO (mg/L)	
Received Date	Conc Avg	Conc Avg	Conc Avg	Conc Min
12-Jun-07	0.63			
11-Jul-07	<0.20			
13-Aug-07	<0.20			
11-Sep-07	<0.20			
11-Oct-07	6.61			
14-Nov-07	1.56			
12-Jun-08	<0.20			
11-Jul-08	1.6			
12-Aug-08	<QL			
11-Sep-08	<QL			
14-Oct-08	<QL			
12-Nov-08	<QL			
13-Apr-09	<QL	2	9.9	8.8
12-May-09	0.35	2	8.3	5.5
10-Jun-09	<QL	2	7.3	5.3
15-Jul-09	<QL	1	7.3	6.8
10-Aug-09	3.74	1	6.9	6
11-Sep-09	<QL	1	7	6.5
13-Oct-09	1.99	4	7.4	6.1
12-Nov-09	<QL	4	7.9	7
11-Dec-09	<QL	15	7.8	5.1
12-Jan-10	<QL	2	10.3	8.6
10-Feb-10	<QL	3	9.2	5.2
11-Mar-10	<QL	3	7.7	5.3
13-Apr-10	0.12	8	7.4	5.2
11-May-10	1.95	3	8.5	7.3
11-Jun-10	<QL	2	7.9	7.4
13-Jul-10	<QL	7	7.1	6.4
11-Aug-10	2.64	4	6.7	5.9
13-Sep-10	0.2	9	6.7	6.4
13-Oct-10	0.67	4	7.1	6.5
12-Nov-10	<QL	4	7.7	6.4
13-Dec-10	0.29	4	8.4	7
11-Jan-11	<QL	3	11	8.3
10-Feb-11	<QL	2	11.5	10.2
14-Mar-11	<QL	3	11.2	9.8
13-Apr-11	<QL	1	9.7	8.8
11-May-11	<QL	4	8.1	5.8
13-Jun-11	<QL	3	7.5	3.9
12-Jul-11	<QL	3	7.1	6.5
11-Aug-11	2.46	3	6.7	6.2
Average	1.77	3.69	8.18	6.70

ANALYTICAL REPORT

Project: Urbanna VPDES Permit Application
Project Code: UB_PA
Sample Point: FNE
Sample Date: 05/04/11

Analyte	Method	Unit	Result	Report		Analyst	Analysis Date	Analysis Time
				Limit ¹				
Cyanide, Free*	ASTM D 4282-02	ug/L	<10	10		RMORGA	05/04/11	06:55
Hydrogen Sulfide	ASTM D 4658-03	mg/L	<0.1	0.1		RMORGA	05/06/11	07:15
Total Metals								
Hardness	SM2340B	mgeq CaCO3/L	46.0	0.2		SWILLI	05/09/11	11:03
Chromium	EPA200.8	ug/L	<1.50	1.50		CBATO	05/26/11	15:30
Dissolved Metals								
Silver	EPA200.8	ug/L	<0.20	0.20		KWILLI	05/12/11	12:28
Arsenic	EPA200.8	ug/L	<1.00	1.00		KWILLI	05/12/11	12:28
Cadmium	EPA200.8	ug/L	<0.30	0.30		KWILLI	05/12/11	12:28
Chromium	EPA200.8	ug/L	<1.50	1.50		KWILLI	05/12/11	12:28
Chromium III (Measured as Total Chromium)		ug/L	<1.50	1.50		CBATO	05/26/11	15:30
Chromium VI (Measured as Total Chromium)		ug/L	<1.50	1.50		CBATO	05/26/11	15:30
Copper	EPA200.8	ug/L	2.84	0.50		KWILLI	05/12/11	12:28
Mercury	EPA245.1	ug/L	<0.1	0.1		SLABOC	05/10/11	14:01
Nickel	EPA200.8	ug/L	1.41	0.50		KWILLI	05/12/11	12:28
Lead	EPA200.8	ug/L	<0.50	0.50		KWILLI	05/12/11	12:28
Antimony	EPA200.8	ug/L	<1.00	1.00		KWILLI	05/12/11	12:28
Selenium	EPA200.8	ug/L	<2.00	2.00		KWILLI	05/12/11	12:28
Thallium	EPA200.8	ug/L	<0.10	0.10		KWILLI	05/12/11	12:28
Zinc	EPA200.8	ug/L	19.3	3.00		KWILLI	05/12/11	12:28

Notes

¹ Report Limit is lowest concentration at which quantitation is demonstrated.

* Parameter is not included in HRSD CEL VELAP scope of accreditation.

ANALYTICAL REPORT

Project: Urbanna VPDES Permit Application
Project Code: UB_PA
Sample Point: FNE
Sample Date: 05/04/11

Analyte	Method	Unit	Result	Report	Analyst	Analysis Date	Analysis
				Limit ¹			Time
<u>Volatiles</u>							
Acrolein	EPA624	ug/L	<50.0	50.0	SLOPEZ	05/05/11	12:36
Acrylonitrile	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Benzene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Bromoform	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Carbon Tetrachloride	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Chlorobenzene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Chlorodibromomethane	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Chloroform	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Methylene Chloride	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Dichlorobromomethane	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
1,2-Dichloroethane	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
1,1-Dichloroethylene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
trans-1,2-dichloroethylene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
1,2-Dichloropropane	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
1,3-Dichloropropene*	EPA624	ug/L	<20.0	20.0	SLOPEZ	05/05/11	16:06
Ethylbenzene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Methyl Bromide	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
1,1,2,2-Tetrachloroethane	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Tetrachloroethylene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Toluene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
1,1,2-Trichloroethane	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Trichloroethylene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
Vinyl Chloride	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
1,2 Dichlorobenzene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
1,3 Dichlorobenzene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06
1,4 Dichlorobenzene	EPA624	ug/L	<10.0	10.0	SLOPEZ	05/05/11	16:06

Notes

¹ Report Limit is lowest concentration at which quantitation is demonstrated.

*1,3-Dichloropropene is the total of cis-1,3-Dichloropropylene and trans-1,3-Dichloropropylene.

ANALYTICAL REPORT

Project: Urbanna VPDES Permit Application
Project Code: UB_PA
Sample Point: FNE
Sample Date: 05/04/11

Analyte	Method	Unit	Result	Report	Analyst	Analysis Date	Analysis
				Limit ¹			Time
<u>Semi-Valotiles</u>							
Acenaphthene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Anthracene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Benzidine	EPA625	ug/L	<10.0	10.0	IGERAS	05/07/11	06:14
Benzo (a) anthracene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Benzo (b) fluoranthene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Benzo (k) fluoranthene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Benzo (a) pyrene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Bis (2-chloroethyl)ether	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Bis (2-chloroisopropyl)ether	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Butyl benzyl phthalate	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
2-Chloronaphthalene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Chrysene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Dibenz(a,h)anthracene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Di-n-butyl phthalate	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
3,3-Dichlorobenzidine	EPA625	ug/L	<10.0	10.0	IGERAS	05/11/11	00:29
Diethyl phthalate	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Di-2-ethylhexyl phthalate	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Dimethyl phthalate	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
2,4-Dinitrotoluene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
1,2-Diphenylhydrazine*	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Fluoranthene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Fluorene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Hexachlorobenzene	EPA625	ug/L	<2.00	2.00	IGERAS	05/06/11	22:08
Hexachlorobutadiene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Hexachlorocyclopentadiene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Hexachloroethane	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Indeno(1,2,3-cd)pyrene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08

Notes

¹ Report Limit is lowest concentration at which quantitation is demonstrated.

*1,2-Diphenylhydrazine is converted to Azobenzene in extraction process. 1,2-Diphenylhydrazine is not included in the HRSD CEL VELAP scope of accreditation.

ANALYTICAL REPORT

Project: Urbanna VPDES Permit Application
Project Code: UB_PA
Sample Point: FNE
Sample Date: 05/04/11

Analyte	Method	Unit	Report		Analyst	Analysis	Analysis
			Result	Limit ¹		Date	Time
Isophorone	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Nitrobenzene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
N-Nitrosodi-n-methylamine	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
N-Nitrosodi-n-propylamine	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
N-Nitrosodi-n-phenylamine*	EPA625	ug/L	<10.0	10.0	IGERAS	05/11/11	00:29
Pyrene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
1,2,4-Trichlorobenzene	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
2-Chlorophenol	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
2,4-Dichlorophenol	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
2,4-Dimethylphenol	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
2,4-Dinitrophenol	EPA625	ug/L	<10.0	10.0	IGERAS	05/11/11	00:29
2-Methyl-4,6-Dinitrophenol	EPA625	ug/L	<10.0	10.0	IGERAS	05/11/11	00:29
Nonylphenol**	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Pentachlorophenol	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
Phenol	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
2,4,6-Trichlorophenol	EPA625	ug/L	<10.0	10.0	IGERAS	05/06/11	22:08
<u>Pesticides/PCB's</u>							
Aldrin	EPA608	ug/L	<0.05	0.05	CCURRY	05/10/11	20:26
DDD	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
DDE	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
DDT	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
Dieldrin	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
Alpha-Endosulfan	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
Beta-Endosulfan	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
Endosulfan Sulfate	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
Endrin	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26

Notes

¹ Report Limit is lowest concentration at which quantitation is demonstrated.

*n-Nitrosodi-phenylamine decomposes in the injection port to Diphenylamine.

** Parameter is not included in HRSD CEL VELAP scope of accreditation.

ANALYTICAL REPORT

Project: Urbanna VPDES Permit Application
 Project Code: UB_PA
 Sample Point: FNE
 Sample Date: 05/04/11

Analyte	Method	Unit	Result	Report	Analyst	Analysis Date	Analysis
				Limit ¹			Time
<u>Pesticides/PCB's</u>							
Endrin Aldehyde	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
Heptachlor	EPA608	ug/L	<0.05	0.05	CCURRY	05/10/11	20:26
Heptachlor Epoxide	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
Alpha-BHC	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
Beta-BHC	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
Gamma-BHC	EPA608	ug/L	<0.1	0.1	CCURRY	05/10/11	20:26
Chlordane	EPA608	ug/L	ND	0.2	CCURRY	05/11/11	04:21
PCB Total	EPA608	ug/L	ND	7.0	CCURRY	05/11/11	04:21
Toxaphene	EPA608	ug/L	ND	5.0	CCURRY	05/11/11	04:21
Chlorpyrifos	EPA622	ug/L	<0.1	0.1	CCURRY	05/10/11	16:58
Demeton*	EPA622	ug/L	<0.1	0.1	CCURRY	05/10/11	16:58
Diazinon	EPA622	ug/L	<0.1	0.1	CCURRY	05/10/11	16:58
Guthion	EPA622	ug/L	<0.1	0.1	CCURRY	05/10/11	16:58
Malathion	EPA622	ug/L	<0.1	0.1	CCURRY	05/10/11	16:58
Parathion	EPA622	ug/L	<0.1	0.1	CCURRY	05/10/11	16:58
Kepone	EPA8081	ug/L	<0.6	0.6	CCURRY	05/19/11	14:13
Methoxychlor	EPA8081	ug/L	<0.05	0.05	CCURRY	05/19/11	22:18
Mirex	EPA8081	ug/L	<0.05	0.05	CCURRY	05/19/11	22:18

Notes

¹ Report Limit is lowest concentration at which quantitation is demonstrated.

* Parameter is not included in HRSD CEL VELAP scope of accreditation.

Authorization:
 Lab Manager

Rolin Parnell

Date:

5/31/11

QA Manager

Virginia Institute of Marine Science
Department of Environmental and Aquatic Animal Health
Route 1208 Greates Road
Gloucester Point VA 23062
804-684-7654

ANALYTICAL REPORT

Project Code: UB_PA
Sample Point: FNE
Sample Date: 05/04/11

Analyte	Method	Unit	Result	Report Limit ¹	Analyst	Analysis Date	Analysis Time
TBT	Unger	ng/L	<30	30	ET	05/24/11	11:07

VIMS is a non VELAP certified lab.

Notes

¹ Report Limit is lowest concentration at which quantitation is demonstrated.

Authorization: Ellen Travelstead *Ellen Travelstead* Date: 05/24/2011

Bauer, Jaime (DEQ)

Subject: FW: VA0026263 Urbanna chlorine residual data

From: Nicklas, Sharon [mailto:SNICKLAS@HRSD.COM]

Sent: Thursday, July 21, 2011 9:58 AM

To: Bauer, Jaime (DEQ)

Subject: VA0026263 Urbanna chlorine residual data

Jaime,

The Urbanna final effluent was tested for chlorine on 7/21/2011. The sample time was 8:40 am. The analysis time was 8:43 am. The analytical method is SM4500 Cl G with a QL of 0.10 mg/l. The data result was <0.10 mg/l.

Please let me know if you need anything else.

Thanks,

Sharon Nicklas
HRSD-Permits Manager
757-460-4245
snicklas@hrsd.com

FINAL EFFLUENT TEMPERATURE

Annual

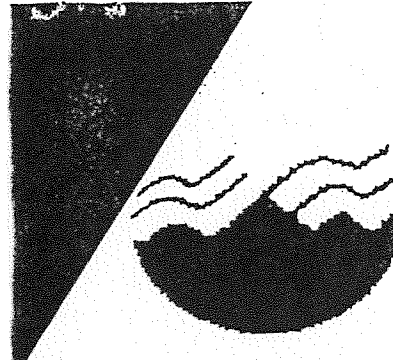
Day	Jan-2011	Feb-2011	Mar-2011	Apr-2011	May-2011	Jun-2010	Jul-2010	Aug-2010	Sep-2010	Oct-2010	Nov-2010	Dec-2010
1	10.5	8.0	12.8	12.3	19.2	24.4	26.0	26.1	26.8	23.4	17.5	17.1
2	13.3	10.8	10.7	12.4	18.6	25.0	24.6	26.1	27.1	21.9	15.8	13.3
3	9.9	9.5	11.0	12.1	21.1	25.9	25.0	26.7	26.8	21.2	16.3	13.1
4	8.2	8.9	9.8	14.0	21.2	25.2	25.1	27.5	26.9	20.9	17.8	12.0
5	8.2	9.7	11.6	17.6	18.2	26.2	26.5	27.9	24.9	19.0	20.0	12.1
6	10.4	9.3	13.8	13.6	18.5	24.9	30.0	27.7	24.9	18.8	17.3	10.1
7	8.2	8.9	12.3	14.9	22.0	25.8	28.5	27.6	25.9	18.9	17.4	8.6
8	8.0	11.1	11.5	15.1	19.7	24.3	28.6	27.1	26.3	20.0	14.7	7.8
9	6.8	8.3	11.2	14.0	19.6	23.5	28.0	27.8	25.5	19.9	15.3	7.8
10	6.4	8.0	13.0	14.2	19.3	25.2	27.8	27.8	24.2	19.5	16.1	8.3
11	6.5	6.8	13.6	16.7	19.5	25.4	27.1	28.6	24.0	21.6	16.0	9.3
12	7.2	8.6	12.8	15.4	19.8	24.9	27.4	28.9	24.4	22.1	15.8	10.0
13	6.1	8.8	13.1	18.6	23.7	26.4	27.6	28.3	23.9	22.1	16.1	11.8
14	6.5	9.9	13.1	16.4	22.9	27.0	28.2	26.8	24.1	21.7	15.9	7.9
15	7.5	10.0	12.2	16.4	20.8	26.9	27.5	27.3	23.9	19.3	15.5	6.8
16	7.1	9.3	12.8	17.0	21.1	26.2	28.3	27.3	25.4	19.0	16.8	6.6
17	8.0	10.4	13.2	16.8	21.8	26.5	28.2	27.9	25.5	18.7	16.8	7.2
18	8.1	13.6	14.5	17.1	21.2	26.2	27.8	28.5	23.5	19.2	15.8	7.9
19	9.2	13.8	17.1	18.4	20.5	25.9	27.4	27.7	26.9	19.8	16.8	8.7
20	9.1	11.5	12.8	20.2	24.4	27.0	28.1	27.3	27.2	20.0	15.7	7.7
21	9.6	11.8	13.8	20.2	24.8	27.2	28.3	27.4	23.7	18.6	15.0	7.6
22	6.9	9.7	16.4	17.3	23.5	27.5	28.1	27.1	24.2	18.2	15.0	9.6
23	4.9	8.5	15.3	16.7	23.2	27.3	28.5	27.5	25.6	18.0	16.5	9.6
24	5.1	9.7	14.7	17.8	24.6	27.4	30.0	27.0	26.1	18.8	16.4	9.4
25	6.3	13.1	13.3	21.7	24.8	28.0	29.5	26.4	25.9	19.5	16.1	10.0
26	7.8	12.9	13.1	22.5	25.1	26.2	28.7	26.6	26.1	21.0	16.6	7.3
27	7.9	12.9	13.2	22.9	28.4	27.4	27.9	27.6	24.9	22.6	11.3	5.3
28	8.3	13.5	11.5	23.3	27.7	28.9	27.9	27.3	25.0	23.1	13.3	7.1
29	7.4		10.5	21.8	24.7	28.4	28.6	26.9	24.2	19.8	11.9	7.3
30	8.0		12.0	19.8	25.2	27.6	28.2	29.5	24.5	19.1	14.2	6.9
31	8.5		12.0		27.3		26.8	27.3		17.6		8.3

27.6 °C - 90th Percentile

Winter Months Tier						
Day	Nov-2010	Dec-2010	Jan-2011	Feb-2011	Mar-2011	Apr-2011
1	17.5	17.1	10.5	8.0	12.8	12.3
2	15.8	13.3	13.3	10.8	10.7	12.4
3	16.3	13.1	9.9	9.5	11.0	12.1
4	17.8	12.0	8.2	8.9	9.8	14.0
5	20.0	12.1	8.2	9.7	11.6	17.6
6	17.3	10.1	10.4	9.3	13.8	13.6
7	17.4	8.6	8.2	8.9	12.3	14.9
8	14.7	7.8	8.0	11.1	11.5	15.1
9	15.3	7.8	6.8	8.3	11.2	14.0
10	16.1	8.3	6.4	8.0	13.0	14.2
11	16.0	9.3	6.5	6.8	13.6	16.7
12	15.8	10.0	7.2	8.6	12.8	15.4
13	16.1	11.8	6.1	8.8	13.1	18.6
14	15.9	7.9	6.5	9.9	13.1	16.4
15	15.5	6.8	7.5	10.0	12.2	16.4
16	16.8	6.6	7.1	9.3	12.8	17.0
17	16.8	7.2	8.0	10.4	13.2	16.8
18	15.8	7.9	8.1	13.6	14.5	17.1
19	16.8	8.7	9.2	13.8	17.1	18.4
20	15.7	7.7	9.1	11.5	12.8	20.2
21	15.0	7.6	9.6	11.8	13.8	20.2
22	15.0	9.6	6.9	9.7	16.4	17.3
23	16.5	9.6	4.9	8.5	15.3	16.7
24	16.4	9.4	5.1	9.7	14.7	17.8
25	16.1	10.0	6.3	13.1	13.3	21.7
26	16.6	7.3	7.8	12.9	13.1	22.5
27	11.3	5.3	7.9	12.9	13.2	22.9
28	13.3	7.1	8.3	13.5	11.5	23.3
29	11.9	7.3	7.4		10.5	21.8
30	14.2	6.9	8.0		12.0	19.8
31		8.3	8.5		12.0	

17.1 °C - 90th Percentile

Attachment 7 – Mixing Recommendations



MEMORANDUM

Virginia Water Control Board

Office of Water Resources Management

4900 Cox Road P.O. Box 11143 Richmond, Va.

Subject: Urbanna Mixing
To: Debra Barnes, KRO
From: Dale Phillips, OWRM
Date: March 17, 1993
Copies:



I have applied several models to the Urbanna diffuser to estimate mixing and dilution for permit limits. Unfortunately, no model I have is exactly applicable. CORMIX2 will not analyze a diffuser whose length is less than the depth. CORMIX1 is for single port diffusers. The VMP mixing program will not analyze such small flows.

I applied both CORMIX1 and CORMIX2 using approximations for the parameters that they had trouble with. Both programs indicate that the final dilution is probably limited to that provided by the ambient flow. The dilution factors range from about 2 (for summer acute) to 25 (winter chronic) depending on the particular low flow used. Due to the approximations I was forced to use, I believe that these estimates are conservative. I would recommend that you use a dilution factor of 25 for all permit limits and do not tier the permit without studies to accurately define the actual mixing available for this discharge.

STATE WATER CONTROL BOARD

MAR-19 1993

Tidewater Region
Kilmarnock Office

Morgan, Deborah

From: Brockenbrough, Allan
Sent: Wednesday, January 19, 2005 10:40 AM
To: Morgan, Deborah
Subject: RE: HRSD - Town of Urbanna

Hey Deborah-

I looked in the fact sheet and it appears that Dale has previously run CORMIX and made mixing recommendations for Urbanna. If no significant changes have occurred, I would continue to use the previous mixing analysis.

Give me a call if we need to discuss further.

Allan

Allan Brockenbrough, II, P.E.
DEQ - Office of Water Permit Programs
PO Box 10009
Richmond, VA 23240
(804) 698-4147
(804) 698-4032 (fax)

-----Original Message-----

From: Morgan, Deborah
Sent: Tuesday, January 11, 2005 2:56 PM
To: Brockenbrough, Allan
Subject: HRSD - Town of Urbanna

Hi Allan...Regarding the subject, VA0026263, this facility discharges through a diffuser to Urbanna Creek in Middlesex County. Their design flow is 0.1 mgd and they are on the Significant Discharger List. They discharge 265 feet from the shore at a depth of 5 feet, avg. daily flow rate is 0.06 mgd. (Their outfall is located on the Urbanna topo just above the "C" in Urbanna Creek.) Discharge is not intermittent or periodic. Should I use the 50 to 1 ratio for this facility or do you need to do a Cormix? Urbanna Creek is a fairly large creek and I believe, good dilution. Please let me know what you think.
Thanks...Deb

COMMONWEALTH OF VIRGINIA
DEPARTMENT OF ENVIRONMENTAL QUALITY

Water Division

4900 Cox Road Glen Allen, Virginia 23060

MEMORANDUM

Subject: Urbanna Ammonia
To: Debra Barnes, KRO
From: M. Dale Phillips *Dale*
Date: April 14, 1994
Copies: Diane Osborn, PRO

Attachment B
RECEIVED
APR 18 1994

Background:

I cannot improve much on the previous dilution recommendations. Using those dilutions, it results that an ammonia limit is necessary at this site to meet the requirements of the chronic ammonia standard. The guidance recommends that, for a facility designed to remove ammonia, the design criteria be used in lieu of the assumptions for the ammonia concentration expected in a secondary effluent. This does not indicate that an ammonia limit will not be necessary but rather determines if a more complex design is needed to meet the requirements of the toxic standards. Fortunately the new facility is based on the BNR design and although no limits have been placed on the effluent in the past, this design is specifically to achieve enhanced nitrogen and phosphorus removal. The question is not: is an ammonia limit is needed but rather can the facility, as designed, meet the limit.

A properly constructed and operated BNR plant will achieve essentially complete nitrification in the warm months so the ammonia concentrations in the effluent will be very low during that period. The Urbanna STP should easily meet a summer limit of about 7 mg/l.

During the colder months nitrification may be lost and the effluent ammonia concentrations may be similar to those expected from a secondary STP. However, the stream temperature also will drop during this period and under these conditions the standard is considerably higher. The standard at a temperature of 10°C is about 1.3 mg/l and given a dilution of 25:1, it results that a winter ammonia WLA would be about 32 mg/l and no limit is needed. At a stream temperature of 15°C the need for a limit is borderline. You will need to confirm a specific temperature for the tier. It will be between 10 and 15°C.

Summary:

The proposed design for the new Urbanna treatment plant should provide sufficient ammonia removal to meet the proposed limit when stream temperatures are above 10 to 15°C. When stream temperatures are less than about 10 to 15°C no limit is needed due to the higher standard.

Recommendations:

Issue a tiered permit with the following limits for ammonia:

summer tier: average stream temperature > about 10-15°C = 7.3 mg/l,
winter tier: average stream temperature < about 10-15°C = no limit.

**Attachment 8 – Reasonable Potential Analysis and
Limitation Development**

VA0026263– Urbanna STP

MSTRANTI DATA SOURCE REPORT

Stream Information:	
Mean Hardness	Best Professional Judgment - Conservative Value
90% Temperature	Ambient Water Quality Monitoring Station 3- URB001.50 (Attachment 4)
90% Maximum pH	
10% Maximum pH	
Tier Designation	Flow Frequency Memo (Attachment 1)
Mixing Information:	
All Data	Urbanna Mixing Memos from Dale Phillips - March 17, 1993 and April 14, 1994 (Attachment 7)
Effluent Information:	
Mean Hardness	Effluent Data (Attachment 6)
90% Temperature	Effluent Data (Attachment 6)
90% Maximum pH	DMR Data (Attachment 6)
10% Maximum pH	
Discharge Flow	Application Form 2A

SALTWATER AND TRANSITION ZONES

WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name:
Receiving Stream:

Urbanna STP
Urbanna Creek

Permit No.: VA0026263

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	25	mg/l
90th % Temperature (Annual) =	29.1	(° C)
90th % Temperature (Winter) =	16.3	(° C)
90th % Maximum pH =	8.1	
10th % Maximum pH =	7.2	
Tier Designation (1 or 2) =	2	
Early Life Stages Present Y/N =	Y	
Tidal Zone =	1	(1 = saltwater, 2 = transition zone)
Mean Salinity =	13.7	(g/kg)

Mixing Information

Design Flow (MGD)	0.1
Acute WLA multiplier	25
Chronic WLA multiplier	25
Human health WLA multiplier	25

Effluent Information

Mean Hardness (as CaCO3) =	46	mg/L
90 % Temperature (Annual) =	27.6	(° C)
90 % Temperature (Winter) =	17.1	(° C)
90 % Maximum pH =	8.26	SU
10 % Maximum pH =	7.9	SU
Discharge Flow =	0.1	MGD

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH
Acenaphthene	0	--	--	9.9E+02	--	--	2.5E+04	--	--	9.9E+01	--	--	2.5E+03	--	--	2.5E+03
Acrolein		--	--	9.3E+00	--	--	2.3E+02	--	--	9.3E-01	--	--	2.3E+01	--	--	2.3E+01
Acrylonitrile ^C		--	--	2.5E+00	--	--	6.3E+01	--	--	2.5E-01	--	--	6.3E+00	--	--	6.3E+00
Aldrin ^C	0	1.3E+00	--	5.0E-04	3.3E+01	--	1.3E-02	3.3E-01	--	5.0E-05	8.1E+00	--	1.3E-03	8.1E+00	--	1.3E-03
Ammonia-N (mg/l) - Annual	0	2.32E+00	3.48E-01	--	5.79E+01	8.70E+00	--	5.79E-01	8.70E-02	--	1.45E+01	2.18E+00	--	1.45E+01	2.18E+00	--
Ammonia-N (mg/l) - Winter	0	5.68E+00	8.53E-01	--	1.42E+02	2.13E+01	--	1.42E+00	2.13E-01	--	3.55E+01	5.33E+00	--	3.55E+01	5.33E+00	--
Anthracene	0	--	--	4.0E+04	--	--	1.0E+06	--	--	4.0E+03	--	--	1.0E+05	--	--	1.0E+05
Antimony	0	--	--	6.4E+02	--	--	1.6E+04	--	--	6.4E+01	--	--	1.6E+03	--	--	1.6E+03
Arsenic	0	6.9E+01	3.6E+01	--	1.7E+03	9.0E+02	--	1.7E+01	9.0E+00	--	4.3E+02	2.3E+02	--	4.3E+02	2.3E+02	--
Benzene ^C	0	--	--	5.1E+02	--	--	1.3E+04	--	--	5.1E+01	--	--	1.3E+03	--	--	1.3E+03
Benzidine ^C		--	--	2.0E-03	--	--	5.0E-02	--	--	2.0E-04	--	--	5.0E-03	--	--	5.0E-03
Benzo (a) anthracene ^C	0	--	--	1.8E-01	--	--	4.5E+00	--	--	1.8E-02	--	--	4.5E-01	--	--	4.5E-01
Benzo (b) fluoranthene ^C	0	--	--	1.8E-01	--	--	4.5E+00	--	--	1.8E-02	--	--	4.5E-01	--	--	4.5E-01
Benzo (k) fluoranthene ^C	0	--	--	1.8E-01	--	--	4.5E+00	--	--	1.8E-02	--	--	4.5E-01	--	--	4.5E-01
Benzo (a) pyrene ^C	0	--	--	1.8E-01	--	--	4.5E+00	--	--	1.8E-02	--	--	4.5E-01	--	--	4.5E-01
Bis(2-Chloroethyl) Ether ^C	0	--	--	5.3E+00	--	--	1.3E+02	--	--	5.3E-01	--	--	1.3E+01	--	--	1.3E+01
Bis(2-Chloroisopropyl) Ether	0	--	--	6.5E+04	--	--	1.6E+06	--	--	6.5E+03	--	--	1.6E+05	--	--	1.6E+05
Bis(2-Ethylhexyl) Phthalate ^C	0	--	--	2.2E+01	--	--	5.5E+02	--	--	2.2E+00	--	--	5.5E+01	--	--	5.5E+01
Bromoform ^C	0	--	--	1.4E+03	--	--	3.5E+04	--	--	1.4E+02	--	--	3.5E+03	--	--	3.5E+03
Butylbenzylphthalate	0	--	--	1.9E+03	--	--	4.8E+04	--	--	1.9E+02	--	--	4.8E+03	--	--	4.8E+03
Cadmium	0	4.0E+01	8.8E+00	--	1.0E+03	2.2E+02	--	1.0E+01	2.2E+00	--	2.5E+02	5.5E+01	--	2.5E+02	5.5E+01	--
Carbon Tetrachloride ^C	0	--	--	1.6E+01	--	--	4.0E+02	--	--	1.6E+00	--	--	4.0E+01	--	--	4.0E+01
Chlordane ^C	0	9.0E-02	4.0E-03	8.1E-03	2.3E+00	1.0E-01	2.0E-01	2.3E-02	1.0E-03	8.1E-04	5.6E-01	2.5E-02	2.0E-02	5.6E-01	2.5E-02	2.0E-02

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH
TRC	0			--			--	--	--	--	--	--	--	--	--	--
Chlorine Prod. Oxidant	0	1.3E+01	7.5E+00	--	3.3E+02	1.9E+02	--	3.3E+00	1.9E+00	--	8.1E+01	4.7E+01	--	8.1E+01	4.7E+01	--
Chlorobenzene		--	--	1.6E+03	--	--	4.0E+04	--	--	1.6E+02	--	--	4.0E+03	--	--	4.0E+03
Chlorodibromomethane ^C	0	--	--	1.3E+02	--	--	3.3E+03	--	--	1.3E+01	--	--	3.3E+02	--	--	3.3E+02
Chloroform	0	--	--	1.1E+04	--	--	2.8E+05	--	--	1.1E+03	--	--	2.8E+04	--	--	2.8E+04
2-Chloronaphthalene	0	--	--	1.6E+03	--	--	4.0E+04	--	--	1.6E+02	--	--	4.0E+03	--	--	4.0E+03
2-Chlorophenol	0	--	--	1.5E+02	--	--	3.8E+03	--	--	1.5E+01	--	--	3.8E+02	--	--	3.8E+02
Chlorpyrifos	0	1.1E-02	5.6E-03	--	2.8E-01	1.4E-01	--	2.8E-03	1.4E-03	--	6.9E-02	3.5E-02	--	6.9E-02	3.5E-02	--
Chromium III	0			--			--	--	--	--	--	--	--	--	--	--
Chromium VI	0	1.1E+03	5.0E+01	--	2.8E+04	1.3E+03	--	2.8E+02	1.3E+01	--	6.9E+03	3.1E+02	--	6.9E+03	3.1E+02	--
Chrysene ^C	0	--	--	1.8E-02	--	--	4.5E-01	--	--	1.8E-03	--	--	4.5E-02	--	--	4.5E-02
Copper	0	9.3E+00	6.0E+00	--	2.3E+02	1.5E+02	--	2.3E+00	1.5E+00	--	5.8E+01	3.8E+01	--	5.8E+01	3.8E+01	--
Cyanide, Free	0	1.0E+00	1.0E+00	1.6E+04	2.5E+01	2.5E+01	4.0E+05	2.5E-01	2.5E-01	1.6E+03	6.3E+00	6.3E+00	4.0E+04	6.3E+00	6.3E+00	4.0E+04
DDD ^C	0	--	--	3.1E-03	--	--	7.8E-02	--	--	3.1E-04	--	--	7.8E-03	--	--	7.8E-03
DDE ^C	0	--	--	2.2E-03	--	--	5.5E-02	--	--	2.2E-04	--	--	5.5E-03	--	--	5.5E-03
DDT ^C	0	1.3E-01	1.0E-03	2.2E-03	3.3E+00	2.5E-02	5.5E-02	3.3E-02	2.5E-04	2.2E-04	8.1E-01	6.3E-03	5.5E-03	8.1E-01	6.3E-03	5.5E-03
Demeton	0	--	1.0E-01	--	--	2.5E+00	--	--	2.5E-02	--	--	6.3E-01	--	--	6.3E-01	--
Diazinon	0	8.2E-01	8.2E-01	--	2.1E+01	2.1E+01	--	2.1E-01	2.1E-01	--	5.1E+00	5.1E+00	--	5.1E+00	5.1E+00	--
Dibenz(a,h)anthracene ^C	0	--	--	1.8E-01	--	--	4.5E+00	--	--	1.8E-02	--	--	4.5E-01	--	--	4.5E-01
1,2-Dichlorobenzene	0	--	--	1.3E+03	--	--	3.3E+04	--	--	1.3E+02	--	--	3.3E+03	--	--	3.3E+03
1,3-Dichlorobenzene	0	--	--	9.6E+02	--	--	2.4E+04	--	--	9.6E+01	--	--	2.4E+03	--	--	2.4E+03
1,4-Dichlorobenzene	0	--	--	1.9E+02	--	--	4.8E+03	--	--	1.9E+01	--	--	4.8E+02	--	--	4.8E+02
3,3-Dichlorobenzidine ^C	0	--	--	2.8E-01	--	--	7.0E+00	--	--	2.8E-02	--	--	7.0E-01	--	--	7.0E-01
Dichlorobromomethane ^C	0	--	--	1.7E+02	--	--	4.3E+03	--	--	1.7E+01	--	--	4.3E+02	--	--	4.3E+02
1,2-Dichloroethane ^C	0	--	--	3.7E+02	--	--	9.3E+03	--	--	3.7E+01	--	--	9.3E+02	--	--	9.3E+02
1,1-Dichloroethylene	0	--	--	7.1E+03	--	--	1.8E+05	--	--	7.1E+02	--	--	1.8E+04	--	--	1.8E+04
1,2-trans-dichloroethylene	0	--	--	1.0E+04	--	--	2.5E+05	--	--	1.0E+03	--	--	2.5E+04	--	--	2.5E+04
2,4-Dichlorophenol	0	--	--	2.9E+02	--	--	7.3E+03	--	--	2.9E+01	--	--	7.3E+02	--	--	7.3E+02
1,2-Dichloropropane ^C	0	--	--	1.5E+02	--	--	3.8E+03	--	--	1.5E+01	--	--	3.8E+02	--	--	3.8E+02
1,3-Dichloropropene ^C	0	--	--	2.1E+02	--	--	5.3E+03	--	--	2.1E+01	--	--	5.3E+02	--	--	5.3E+02
Dieldrin ^C	0	7.1E-01	1.9E-03	5.4E-04	1.8E+01	4.8E-02	1.4E-02	1.8E-01	4.8E-04	5.4E-05	4.4E+00	1.2E-02	1.4E-03	4.4E+00	1.2E-02	1.4E-03
Diethyl Phthalate	0	--	--	4.4E+04	--	--	1.1E+06	--	--	4.4E+03	--	--	1.1E+05	--	--	1.1E+05
2,4-Dimethylphenol	0	--	--	8.5E+02	--	--	2.1E+04	--	--	8.5E+01	--	--	2.1E+03	--	--	2.1E+03
Dimethyl Phthalate	0	--	--	1.1E+06	--	--	2.8E+07	--	--	1.1E+05	--	--	2.8E+06	--	--	2.8E+06
Di-n-Butyl Phthalate	0	--	--	4.5E+03	--	--	1.1E+05	--	--	4.5E+02	--	--	1.1E+04	--	--	1.1E+04
2,4 Dinitrophenol	0	--	--	5.3E+03	--	--	1.3E+05	--	--	5.3E+02	--	--	1.3E+04	--	--	1.3E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	2.8E+02	--	--	7.0E+03	--	--	2.8E+01	--	--	7.0E+02	--	--	7.0E+02
2,4-Dinitrotoluene ^C	0	--	--	3.4E+01	--	--	8.5E+02	--	--	3.4E+00	--	--	8.5E+01	--	--	8.5E+01
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	5.1E-08	--	--	1.3E-06	--	--	5.1E-09	--	--	1.3E-07	--	--	1.3E-07
1,2-Diphenylhydrazine ^C	0	--	--	2.0E+00	--	--	5.0E+01	--	--	2.0E-01	--	--	5.0E+00	--	--	5.0E+00
Alpha-Endosulfan	0	3.4E-02	8.7E-03	8.9E+01	8.5E-01	2.2E-01	2.2E+03	8.5E-03	2.2E-03	8.9E+00	2.1E-01	5.4E-02	2.2E+02	2.1E-01	5.4E-02	2.2E+02

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH
Beta-Endosulfan	0	3.4E-02	8.7E-03	8.9E+01	8.5E-01	2.2E-01	2.2E+03	8.5E-03	2.2E-03	8.9E+00	2.1E-01	5.4E-02	2.2E+02	2.1E-01	5.4E-02	2.2E+02
Alpha + Beta Endosulfan	0	3.4E-02	8.7E-03	--	8.5E-01	2.2E-01	--	8.5E-03	2.2E-03	--	2.1E-01	5.4E-02	--	2.1E-01	5.4E-02	--
Endosulfan Sulfate	0	--	--	8.9E+01	--	--	2.2E+03	--	--	8.9E+00	--	--	2.2E+02	--	--	2.2E+02
Endrin	0	3.7E-02	2.3E-03	6.0E-02	9.3E-01	5.8E-02	1.5E+00	9.3E-03	5.8E-04	6.0E-03	2.3E-01	1.4E-02	1.5E-01	2.3E-01	1.4E-02	1.5E-01
Endrin Aldehyde	0	--	--	3.0E-01	--	--	7.5E+00	--	--	3.0E-02	--	--	7.5E-01	--	--	7.5E-01
Ethylbenzene	0	--	--	2.1E+03	--	--	5.3E+04	--	--	2.1E+02	--	--	5.3E+03	--	--	5.3E+03
Fluoranthene	0	--	--	1.4E+02	--	--	3.5E+03	--	--	1.4E+01	--	--	3.5E+02	--	--	3.5E+02
Fluorene	0	--	--	5.3E+03	--	--	1.3E+05	--	--	5.3E+02	--	--	1.3E+04	--	--	1.3E+04
Guthion	0	--	1.0E-02	--	--	2.5E-01	--	--	2.5E-03	--	--	6.3E-02	--	--	6.3E-02	--
Heptachlor ^C	0	5.3E-02	3.6E-03	7.9E-04	1.3E+00	9.0E-02	2.0E-02	1.3E-02	9.0E-04	7.9E-05	3.3E-01	2.3E-02	2.0E-03	3.3E-01	2.3E-02	2.0E-03
Heptachlor Epoxide ^C	0	5.3E-02	3.6E-03	3.9E-04	1.3E+00	9.0E-02	9.8E-03	1.3E-02	9.0E-04	3.9E-05	3.3E-01	2.3E-02	9.8E-04	3.3E-01	2.3E-02	9.8E-04
Hexachlorobenzene ^C	0	--	--	2.9E-03	--	--	7.3E-02	--	--	2.9E-04	--	--	7.3E-03	--	--	7.3E-03
Hexachlorobutadiene ^C	0	--	--	1.8E+02	--	--	4.5E+03	--	--	1.8E+01	--	--	4.5E+02	--	--	4.5E+02
Hexachlorocyclohexane Alpha-BHC ^C	0	--	--	4.9E-02	--	--	1.2E+00	--	--	4.9E-03	--	--	1.2E-01	--	--	1.2E-01
Hexachlorocyclohexane Beta-BHC ^C	0	--	--	1.7E-01	--	--	4.3E+00	--	--	1.7E-02	--	--	4.3E-01	--	--	4.3E-01
Hexachlorocyclohexane Gamma-BHC ^C (Lindane)	0	1.6E-01	--	1.8E+00	4.0E+00	--	4.5E+01	4.0E-02	--	1.8E-01	1.0E+00	--	4.5E+00	1.0E+00	--	4.5E+00
Hexachlorocyclopentadiene	0	--	--	1.1E+03	--	--	2.8E+04	--	--	1.1E+02	--	--	2.8E+03	--	--	2.8E+03
Hexachloroethane ^C	0	--	--	3.3E+01	--	--	8.3E+02	--	--	3.3E+00	--	--	8.3E+01	--	--	8.3E+01
Hydrogen Sulfide	0	--	2.0E+00	--	--	5.0E+01	--	--	5.0E-01	--	--	1.3E+01	--	--	1.3E+01	--
Indeno (1,2,3-cd) pyrene C	0	--	--	1.8E-01	--	--	4.5E+00	--	--	1.8E-02	--	--	4.5E-01	--	--	4.5E-01
Isophorone ^C	0	--	--	9.6E+03	--	--	2.4E+05	--	--	9.6E+02	--	--	2.4E+04	--	--	2.4E+04
Kepone	0	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--
Lead	0	2.4E+02	9.3E+00	--	6.0E+03	2.3E+02	--	6.0E+01	2.3E+00	--	1.5E+03	5.8E+01	--	1.5E+03	5.8E+01	--
Malathion	0	--	1.0E-01	--	--	2.5E+00	--	--	2.5E-02	--	--	6.3E-01	--	--	6.3E-01	--
Mercury	0	1.8E+00	9.4E-01	--	4.5E+01	2.4E+01	--	4.5E-01	2.4E-01	--	1.1E+01	5.9E+00	--	1.1E+01	5.9E+00	--
Methyl Bromide	0	--	--	1.5E+03	--	--	3.8E+04	--	--	1.5E+02	--	--	3.8E+03	--	--	3.8E+03
Methylene Chloride ^C	0	--	--	5.9E+03	--	--	1.5E+05	--	--	5.9E+02	--	--	1.5E+04	--	--	1.5E+04
Methoxychlor	0	--	3.0E-02	--	--	7.5E-01	--	--	7.5E-03	--	--	1.9E-01	--	--	1.9E-01	--
Mirex	0	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--
Nickel	0	7.4E+01	8.2E+00	4.6E+03	1.9E+03	2.1E+02	1.2E+05	1.9E+01	2.1E+00	4.6E+02	4.6E+02	5.1E+01	1.2E+04	4.6E+02	5.1E+01	1.2E+04
Nitrobenzene	0	--	--	6.9E+02	--	--	1.7E+04	--	--	6.9E+01	--	--	1.7E+03	--	--	1.7E+03
N-Nitrosodimethylamine ^C	0	--	--	3.0E+01	--	--	7.5E+02	--	--	3.0E+00	--	--	7.5E+01	--	--	7.5E+01
N-Nitrosodiphenylamine ^C	0	--	--	6.0E+01	--	--	1.5E+03	--	--	6.0E+00	--	--	1.5E+02	--	--	1.5E+02
N-Nitrosodi-n-propylamine ^C	0	--	--	5.1E+00	--	--	1.3E+02	--	--	5.1E-01	--	--	1.3E+01	--	--	1.3E+01
Nonylphenol	0	7.0E+00	1.7E+00	--	1.8E+02	4.3E+01	--	1.8E+00	4.3E-01	--	4.4E+01	1.1E+01	--	4.4E+01	1.1E+01	--
Parathion	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PCB Total ^C	0	--	3.0E-02	6.4E-04	--	7.5E-01	1.6E-02	--	7.5E-03	6.4E-05	--	1.9E-01	1.6E-03	--	1.9E-01	1.6E-03
Pentachlorophenol ^C	0	1.3E+01	7.9E+00	3.0E+01	3.3E+02	2.0E+02	7.5E+02	3.3E+00	2.0E+00	3.0E+00	8.1E+01	4.9E+01	7.5E+01	8.1E+01	4.9E+01	7.5E+01

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH
Phenol	0	--	--	8.6E+05	--	--	2.2E+07	--	--	8.6E+04	--	--	2.2E+06	--	--	2.2E+06
Phosphorus (Elemental)	0	--	1.0E-01	--	--	2.5E+00	--	--	2.5E-02	--	--	6.3E-01	--	--	6.3E-01	--
Pyrene	0	--	--	4.0E+03	--	--	1.0E+05	--	--	4.0E+02	--	--	1.0E+04	--	--	1.0E+04
Radionuclides Beta and Photon Activity (mrem/yr)	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	0	2.9E+02	7.1E+01	4.2E+03	7.3E+03	1.8E+03	1.1E+05	7.3E+01	1.8E+01	4.2E+02	1.8E+03	4.4E+02	1.1E+04	1.8E+03	4.4E+02	1.1E+04
Silver	0	1.9E+00	--	--	4.8E+01	--	--	4.8E-01	--	--	1.2E+01	--	--	1.2E+01	--	--
1,1,2,2-Tetrachloroethane ^C	0	--	--	4.0E+01	--	--	1.0E+03	--	--	4.0E+00	--	--	1.0E+02	--	--	1.0E+02
Tetrachloroethylene ^C	0	--	--	3.3E+01	--	--	8.3E+02	--	--	3.3E+00	--	--	8.3E+01	--	--	8.3E+01
Thallium	0	--	--	4.7E-01	--	--	1.2E+01	--	--	4.7E-02	--	--	1.2E+00	--	--	1.2E+00
Toluene	0	--	--	6.0E+03	--	--	1.5E+05	--	--	6.0E+02	--	--	1.5E+04	--	--	1.5E+04
Toxaphene ^C	0	2.1E-01	2.0E-04	2.8E-03	5.3E+00	5.0E-03	7.0E-02	5.3E-02	5.0E-05	2.8E-04	1.3E+00	1.3E-03	7.0E-03	1.3E+00	1.3E-03	7.0E-03
Tributyltin	0	4.2E-01	7.4E-03	--	1.1E+01	1.9E-01	--	1.1E-01	1.9E-03	--	2.6E+00	4.6E-02	--	2.6E+00	4.6E-02	--
1,2,4-Trichlorobenzene	0	--	--	7.0E+01	--	--	1.8E+03	--	--	7.0E+00	--	--	1.8E+02	--	--	1.8E+02
1,1,2-Trichloroethane ^C	0	--	--	1.6E+02	--	--	4.0E+03	--	--	1.6E+01	--	--	4.0E+02	--	--	4.0E+02
Trichloroethylene ^C	0	--	--	3.0E+02	--	--	7.5E+03	--	--	3.0E+01	--	--	7.5E+02	--	--	7.5E+02
2,4,6-Trichlorophenol ^C	0	--	--	2.4E+01	--	--	6.0E+02	--	--	2.4E+00	--	--	6.0E+01	--	--	6.0E+01
Vinyl Chloride ^C	0	--	--	2.4E+01	--	--	6.0E+02	--	--	2.4E+00	--	--	6.0E+01	--	--	6.0E+01
Zinc	0	9.0E+01	8.1E+01	2.6E+04	2.3E+03	2.0E+03	6.5E+05	2.3E+01	2.0E+01	2.6E+03	5.6E+02	5.1E+02	6.5E+04	5.6E+02	5.1E+02	6.5E+04

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. For transition zone waters, spreadsheet prints the lesser of the freshwater and saltwater water quality criteria.
6. Regular WLA = (WQC x WLA multiplier) - (WLA multiplier - 1)(background conc.)
7. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
8. Antideg. WLA = (Antideg. Baseline)(WLA multiplier) - (WLA multiplier - 1)(background conc.)

Site Specific	
<u>Metal</u>	<u>Target Value (SSTV)</u>
Antimony	1.6E+03
Arsenic III	1.4E+02
Cadmium	3.3E+01
Chromium III	#VALUE!
Chromium VI	1.9E+02
Copper	2.3E+01
Lead	3.5E+01
Mercury	3.5E+00
Nickel	3.1E+01
Selenium	2.7E+02
Silver	4.8E+00
Zinc	2.3E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

Ammonia - Annual

Chronic averaging period = 30

WLAa = 14.5 mg/L

WLAc = 2.18 mg/L

Q.L. = 0.2 mg/L

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 9

Variance = 29.16

C.V. = 0.6

97th percentile daily values = 21.9007

97th percentile 4 day average = 14.9741

97th percentile 30 day average = 10.8544

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity

Maximum Daily Limit = 4.39852080364756

Average Weekly limit = 4.39852080364756

Average Monthly Limit = 4.39852080364756

The data are: 9.00 mg/L

Ammonia - Winter

Chronic averaging period = 30

WLAa = 35.5 mg/L

WLAc = 5.33 mg/L

Q.L. = 0.2 mg/L

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 9

Variance = 29.16

C.V. = 0.6

97th percentile daily values = 21.9007

97th percentile 4 day average = 14.9741

97th percentile 30 day average = 10.8544

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity

Maximum Daily Limit = 10.7541815979089

Average Weekly limit = 10.7541815979089

Average Monthly Limit = 10.7541815979089

The data are: 9.00 mg/L

Note that 9.00 mg/L was used to force a limitation per Guidance Memo 00-20110. As shown above, an annual ammonia limitation of 4.40 mg/L monthly and weekly average is necessary to protect water quality. Additionally, the ammonia –winter limitation necessary to protect water quality is 10.75 mg/L. However, previous permits include annual ammonia limitations of 3.83 mg/L and a winter limitation of 9.08 mg/L, both of which are more stringent. Due to anti-back sliding provisions, the 3.83 mg/L annual ammonia and 9.08 mg/L winter ammonia permit limitations will be carried forward.

Attached is documentation demonstrating how the ammonia limitations were calculated.

Copper

Chronic averaging period = 4

WLAa = 58 µg/L

WLAc = 38 µg/L

Q.L. = 0.5 µg/L

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 2.84

Variance = 2.90361

C.V. = 0.6

97th percentile daily values = 6.91090

97th percentile 4 day average = 4.72516

97th percentile 30 day average = 3.42519

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 2.84 µg/L

Zinc

Chronic averaging period = 4

WLAa = 560 µg/L

WLAc = 510 µg/L

Q.L. = 2.0 µg/L

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 19.3

Variance = 134.096

C.V. = 0.6

97th percentile daily values = 46.9649

97th percentile 4 day average = 32.1111

97th percentile 30 day average = 23.2768

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 19.3 µg/L

Nickel

Chronic averaging period = 4

WLAa = 460 µg/L

WLAc = 51 µg/L

Q.L. = 0.50 µg/L

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 1.41

Variance = .715716

C.V. = 0.6

97th percentile daily values = 3.43111

97th percentile 4 day average = 2.34594

97th percentile 30 day average = 1.70053

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are: 1.41 µg/L

Attachment F

Effluent Limitations Evaluations

Ammonia (Annual)

Facility = HRSD Urbanna STP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 13
WLAc = 1.9
Q.L. = .20
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9.00
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average = 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 3.83357317749099
Average Weekly limit = 3.83357317749099
Average Monthly Limit = 3.83357317749099

The data are:
9.00

Ammonia (Winter)

Facility = HRSD Urbanna STP
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 30
WLAc = 4.5
Q.L. = .20
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 9.00
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average = 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 9.0795154203734
Average Weekly limit = 9.0795154203734
Average Monthly Limit = 9.0795154203734

The data are:
9.00

Note: 9.00 mg/L was used to force a limitation per Guidance Memorandum 00-2011. As indicated, the annual ammonia limitation is 3.83 mg/L monthly and weekly average. The facility currently has a tiered ammonia limitation, so that tiering was carried forward to this permit reissuance. The ammonia limits are therefore less stringent for the months of November through April, with limitations of 9.08 mg/L; the limitation for May – October is 3.83 mg/L.

Dale Philips commented in his 1993 modeling memorandum that tiered ammonia limitations should not be granted for this facility unless “studies to accurately define the actual mixing available for this discharge” were performed. However, in a later 1994 memorandum, he recommended tiered ammonia limitations (no limitation in the winter and a BEJ limitation for May through October); a copy of this memo has been added to this attachment. As the current permit has approved the tiering of ammonia limitations, this draft permit will also continue to tier the ammonia limitations.

Per GM06-2016, “More than two significant figures may be necessary for water quality based limits (to be consistent with the underlying standard)....” The ammonia limitations described above are examples of such water quality based limits as the standards used to develop the WLAs are written to the hundredths place, i.e. 1.19 mg/L at 30 g/kg salinity, 35 °C, and 7.40 S.U. pH (ref. 9 VAC 260-155). Accordingly, these ammonia limitations were expressed in the permit to the hundredths place (e.g. with three significant figures).

Zinc (Dissolved)

Facility = HRSD Urbanna STP

Chemical = Zinc

Chronic averaging period = 4

WLAa = 560

WLAc = 510

Q.L. = 10

samples/mo. = 1

samples/wk. = 1

Summary of Statistics:

observations = 1

Expected Value = 51

Variance = 936.36

C.V. = 0.6

97th percentile daily values = 124.104

97th percentile 4 day average = 84.8532

97th percentile 30 day average = 61.5087

< Q.L. = 0

Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

51

Note: As indicated, no limitations are required at this time for zinc.

SALTWATER AND TRANSITION ZONES WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: HRSU Urbanna
Receiving Stream: Urbanna Creek

Permit No.: VA0026263

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information **3UR 3001.00 per JV Palmore**

Mean Hardness (as CaCO₃) = mg/l

90th % Temperature (Annual) = 28.46 (°C)

90th % Temperature (Winter) = 16.27 (°C)

90th % Maximum pH = 8.192

10th % Maximum pH = 7.402

Tier Designation (1 or 2) = 2

Early Life Stages Present Y/N = Y

Tidal Zone = 1 (1 = saltwater, 2 = transition zone)

Mean Salinity = 13.49 (g/kg)

Mixing Information

Design Flow (MGD) 0.1

Acute WLA multiplier 25

Chronic WLA multiplier 25

Human health WLA multiplier 25

Effluent Information

Mean Hardness (as CaCO₃) = 25 mg/L

90 % Temperature (Annual) = 27.7 (°C)

90 % Temperature (Winter) = 13.7 (°C)

90 % Maximum pH = 8.1 SU

10 % Maximum pH = 7.6 SU

Discharge Flow = 0.1 MGD

assumed
submitted T data

due data

per
date
Philips
memo
(1993 & 1994)

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH
Acenaphthene	0	--	--	2.7E+03	--	--	6.8E+04	--	--	2.7E+02	--	--	6.8E+03	--	--	6.8E+03
Acrolein		--	--	7.8E+02	--	--	2.0E+04	--	--	7.8E+01	--	--	2.0E+03	--	--	2.0E+03
Acrylonitrile ^c		--	--	6.6E+00	--	--	1.7E+02	--	--	6.6E-01	--	--	1.7E+01	--	--	1.7E+01
Aldrin ^c	0	1.3E+00	--	1.4E-03	3.3E+01	--	3.5E-02	3.3E-01	--	1.4E-04	8.1E+00	--	3.5E-03	8.1E+00	--	3.5E-03
Ammonia-N (mg/l) - Annual	0	2.0E+00	3.0E-01	--	5.1E+01	7.6E+00	--	5.1E-01	7.6E-02	--	1.3E+01	1.9E+00	--	1.3E+01	1.9E+00	--
Ammonia-N (mg/l) - Winter	0	4.8E+00	7.2E-01	--	1.2E+02	1.8E+01	--	1.2E+00	1.8E-01	--	3.0E+01	4.5E+00	--	3.0E+01	4.5E+00	--
Anthracene	0	--	--	1.1E+05	--	--	2.8E+06	--	--	1.1E+04	--	--	2.8E+05	--	--	2.8E+05
Antimony	0	--	--	4.3E+03	--	--	1.1E+05	--	--	4.3E+02	--	--	1.1E+04	--	--	1.1E+04
Arsenic	0	6.9E+01	3.6E+01	--	1.7E+03	9.0E+02	--	1.7E+01	9.0E+00	--	4.3E+02	2.3E+02	--	4.3E+02	2.3E+02	--
Benzene ^c	0	--	--	7.1E+02	--	--	1.8E+04	--	--	7.1E+01	--	--	1.8E+03	--	--	1.8E+03
Benzo(a)anthracene ^c	0	--	--	5.4E-03	--	--	1.4E-01	--	--	5.4E-04	--	--	1.4E-02	--	--	1.4E-02
Benzo(b)fluoranthene ^c	0	--	--	4.9E-01	--	--	1.2E+01	--	--	4.9E-02	--	--	1.2E+00	--	--	1.2E+00
Benzo(k)fluoranthene ^c	0	--	--	4.9E-01	--	--	1.2E+01	--	--	4.9E-02	--	--	1.2E+00	--	--	1.2E+00
Benzo(a)pyrene ^c	0	--	--	4.9E-01	--	--	1.2E+01	--	--	4.9E-02	--	--	1.2E+00	--	--	1.2E+00
Bis(2-Chloroethyl) Ether	0	--	--	1.4E+01	--	--	3.5E+02	--	--	1.4E+00	--	--	3.5E+01	--	--	3.5E+01
Bis(2-Chloroisopropyl) Ether	0	--	--	1.7E+05	--	--	4.3E+06	--	--	1.7E+04	--	--	4.3E+05	--	--	4.3E+05
Bromform ^c	0	--	--	3.6E+03	--	--	9.0E+04	--	--	3.6E+02	--	--	9.0E+03	--	--	9.0E+03
Butylbenzylphthalate	0	--	--	5.2E+03	--	--	1.3E+05	--	--	5.2E+02	--	--	1.3E+04	--	--	1.3E+04
Cadmium	0	4.0E+01	8.8E+00	--	1.0E+03	2.2E+02	--	1.0E+01	2.2E+00	--	2.5E+02	5.5E+01	--	2.5E+02	5.5E+01	--
Carbon Tetrachloride ^c	0	--	--	4.4E+01	--	--	1.1E+03	--	--	4.4E+00	--	--	1.1E+02	--	--	1.1E+02
Chlordane ^c	0	9.0E-02	4.0E-03	2.2E-02	2.3E+00	1.0E-01	5.5E-01	2.3E-02	1.0E-03	2.2E-03	5.6E-01	2.5E-02	5.5E-02	5.6E-01	2.5E-02	5.5E-02
TRC	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chlorine Prod. Oxidant	0	1.3E+01	7.5E+00	--	3.3E+02	1.9E+02	--	3.3E+00	1.9E+00	--	8.1E+01	4.7E+01	--	8.1E+01	4.7E+01	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH
Chlorobenzene	0	--	--	2.1E+04	--	--	5.3E+05	--	--	2.1E+03	--	--	5.3E+04	--	--	5.3E+04
Chlorodibromomethane ^c	0	--	--	3.4E+02	--	--	8.5E+03	--	--	3.4E+01	--	--	8.5E+02	--	--	8.5E+02
Chloroform ^c	0	--	--	2.9E+04	--	--	7.3E+05	--	--	2.9E+03	--	--	7.3E+04	--	--	7.3E+04
2-Chloronaphthalene	0	--	--	4.3E+03	--	--	1.1E+05	--	--	4.3E+02	--	--	1.1E+04	--	--	1.1E+04
2-Chlorophenol	0	--	--	4.0E+02	--	--	1.0E+04	--	--	4.0E+01	--	--	1.0E+03	--	--	1.0E+03
Chlorpyrifos	0	1.1E-02	5.6E-03	--	2.8E-01	1.4E-01	--	2.8E-03	1.4E-03	--	6.9E-02	3.5E-02	--	6.9E-02	3.5E-02	--
Chromium III	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium VI	0	1.1E+03	5.0E+01	--	2.8E+04	1.3E+03	--	2.8E+02	1.3E+01	--	6.9E+03	3.1E+02	--	6.9E+03	3.1E+02	--
Chrysene ^c	0	--	--	4.9E-01	--	--	1.2E+01	--	--	4.9E-02	--	--	1.2E+00	--	--	1.2E+00
Copper	0	9.3E+00	6.0E+00	--	2.3E+02	1.5E+02	--	2.3E+00	1.5E+00	--	5.8E+01	3.8E+01	--	5.8E+01	3.8E+01	--
Cyanide	0	1.0E+00	1.0E+00	2.2E+05	2.5E+01	2.5E+01	5.4E+06	2.5E-01	2.5E-01	2.2E+04	6.3E+00	6.3E+00	5.4E+05	6.3E+00	6.3E+00	5.4E+05
DDD ^c	0	--	--	8.4E-03	--	--	2.1E-01	--	--	8.4E-04	--	--	2.1E-02	--	--	2.1E-02
DDE ^c	0	--	--	5.9E-03	--	--	1.5E-01	--	--	5.9E-04	--	--	1.5E-02	--	--	1.5E-02
DDT ^c	0	1.3E-01	1.0E-03	5.9E-03	3.3E+00	2.5E-02	1.5E-01	3.3E-02	2.5E-04	5.9E-04	8.1E-01	6.3E-03	1.5E-02	8.1E-01	6.3E-03	1.5E-02
Demeton	0	--	1.0E-01	--	--	2.5E+00	--	--	2.5E-02	--	--	6.3E-01	--	--	6.3E-01	--
Dibenz(a,h)anthracene ^c	0	--	--	4.9E-01	--	--	1.2E+01	--	--	4.9E-02	--	--	1.2E+00	--	--	1.2E+00
Dibutyl phthalate	0	--	--	1.2E+04	--	--	3.0E+05	--	--	1.2E+03	--	--	3.0E+04	--	--	3.0E+04
Dichloromethane (Methylene Chloride) ^c	0	--	--	1.6E+04	--	--	4.0E+05	--	--	1.6E+03	--	--	4.0E+04	--	--	4.0E+04
1,2-Dichlorobenzene	0	--	--	1.7E+04	--	--	4.3E+05	--	--	1.7E+03	--	--	4.3E+04	--	--	4.3E+04
1,3-Dichlorobenzene	0	--	--	2.6E+03	--	--	6.5E+04	--	--	2.6E+02	--	--	6.5E+03	--	--	6.5E+03
1,4-Dichlorobenzene	0	--	--	2.6E+03	--	--	6.5E+04	--	--	2.6E+02	--	--	6.5E+03	--	--	6.5E+03
3,3'-Dichlorobenzidine ^c	0	--	--	7.7E-01	--	--	1.9E+01	--	--	7.7E-02	--	--	1.9E+00	--	--	1.9E+00
Dichlorobromomethane ^c	0	--	--	4.6E+02	--	--	1.2E+04	--	--	4.6E+01	--	--	1.2E+03	--	--	1.2E+03
1,2-Dichloroethane ^c	0	--	--	9.9E+02	--	--	2.5E+04	--	--	9.9E+01	--	--	2.5E+03	--	--	2.5E+03
1,1'-Dichloroethylene	0	--	--	1.7E+04	--	--	4.3E+05	--	--	1.7E+03	--	--	4.3E+04	--	--	4.3E+04
1,2-trans-dichloroethylene	0	--	--	1.4E+05	--	--	3.5E+06	--	--	1.4E+04	--	--	3.5E+05	--	--	3.5E+05
2,4-Dichlorophenol	0	--	--	7.9E+02	--	--	2.0E+04	--	--	7.9E+01	--	--	2.0E+03	--	--	2.0E+03
1,2-Dichloropropane ^c	0	--	--	3.9E+02	--	--	9.8E+03	--	--	3.9E+01	--	--	9.8E+02	--	--	9.8E+02
1,3-Dichloropropene	0	--	--	1.7E+03	--	--	4.3E+04	--	--	1.7E+02	--	--	4.3E+03	--	--	4.3E+03
Dieldrin ^c	0	7.1E-01	1.9E-03	1.4E-03	1.8E+01	4.8E-02	3.5E-02	1.8E-01	4.8E-04	1.4E-04	4.4E+00	1.2E-02	3.5E-03	4.4E+00	1.2E-02	3.5E-03
Diethyl Phthalate	0	--	--	1.2E+05	--	--	3.0E+06	--	--	1.2E+04	--	--	3.0E+05	--	--	3.0E+05
Di-2-Ethylhexyl Phthalate ^c	0	--	--	5.9E+01	--	--	1.5E+03	--	--	5.9E+00	--	--	1.5E+02	--	--	1.5E+02
2,4-Dimethylphenol	0	--	--	2.3E+03	--	--	5.8E+04	--	--	2.3E+02	--	--	5.8E+03	--	--	5.8E+03
Dimethyl Phthalate	0	--	--	2.9E+06	--	--	7.3E+07	--	--	2.9E+05	--	--	7.3E+06	--	--	7.3E+06
Di-n-Butyl Phthalate	0	--	--	1.2E+04	--	--	3.0E+05	--	--	1.2E+03	--	--	3.0E+04	--	--	3.0E+04
2,4 Dinitrophenol	0	--	--	1.4E+04	--	--	3.5E+05	--	--	1.4E+03	--	--	3.5E+04	--	--	3.5E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	7.65E+02	--	--	1.9E+04	--	--	7.7E+01	--	--	1.9E+03	--	--	1.9E+03
2,4-Dinitrotoluene ^c	0	--	--	9.1E+01	--	--	2.3E+03	--	--	9.1E+00	--	--	2.3E+02	--	--	2.3E+02
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	1.2E-06	--	--	3.0E-05	--	--	1.2E-07	--	--	3.0E-06	--	--	3.0E-06
1,2-Diphenylhydrazine ^c	0	--	--	5.4E+00	--	--	1.4E+02	--	--	5.4E-01	--	--	1.4E+01	--	--	1.4E+01
Alpha-Endosulfan	0	3.4E-02	8.7E-03	2.4E+02	8.5E-01	2.2E-01	6.0E+03	8.5E-03	2.2E-03	2.4E+01	2.1E-01	5.4E-02	6.0E+02	2.1E-01	5.4E-02	6.0E+02

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH
Beta-Endosulfan	0	3.4E-02	8.7E-03	2.4E+02	8.5E-01	2.2E-01	6.0E+03	8.5E-03	2.2E-03	2.4E+01	2.1E-01	5.4E-02	6.0E+02	2.1E-01	5.4E-02	6.0E+02
Endosulfan Sulfate	0	--	--	2.4E+02	--	--	6.0E+03	--	--	2.4E+01	--	--	6.0E+02	--	--	6.0E+02
Endrin	0	3.7E-02	2.3E-03	8.1E-01	9.3E-01	5.8E-02	2.0E+01	9.3E-03	5.8E-04	8.1E-02	2.3E-01	1.4E-02	2.0E+00	2.3E-01	1.4E-02	2.0E+00
Endrin Aldehyde	0	--	--	8.1E-01	--	--	2.0E+01	--	--	8.1E-02	--	--	2.0E+00	--	--	2.0E+00
Ethylbenzene	0	--	--	2.9E+04	--	--	7.3E+05	--	--	2.9E+03	--	--	7.3E+04	--	--	7.3E+04
Fluoranthene	0	--	--	3.7E+02	--	--	9.3E+03	--	--	3.7E+01	--	--	9.3E+02	--	--	9.3E+02
Fluorene	0	--	--	1.4E+04	--	--	3.5E+05	--	--	1.4E+03	--	--	3.5E+04	--	--	3.5E+04
Guthion	0	--	1.0E-02	--	--	2.5E-01	--	--	2.5E-03	--	--	6.3E-02	--	--	6.3E-02	--
Heptachlor ^c	0	5.3E-02	3.6E-03	2.1E-03	1.3E+00	9.0E-02	5.3E-02	1.3E-02	9.0E-04	2.1E-04	3.3E-01	2.3E-02	5.3E-03	3.3E-01	2.3E-02	5.3E-03
Heptachlor Epoxide ^c	0	5.3E-02	3.6E-03	1.1E-03	1.3E+00	9.0E-02	2.8E-02	1.3E-02	9.0E-04	1.1E-04	3.3E-01	2.3E-02	2.8E-03	3.3E-01	2.3E-02	2.8E-03
Hexachlorobenzene ^c	0	--	--	7.7E-03	--	--	1.9E-01	--	--	7.7E-04	--	--	1.9E-02	--	--	1.9E-02
Hexachlorobutadiene ^c	0	--	--	5.0E+02	--	--	1.3E+04	--	--	5.0E+01	--	--	1.3E+03	--	--	1.3E+03
Hexachlorocyclohexane Alpha-BHC ^c	0	--	--	1.3E-01	--	--	3.3E+00	--	--	1.3E-02	--	--	3.3E-01	--	--	3.3E-01
Hexachlorocyclohexane Beta-BHC ^c	0	--	--	4.6E-01	--	--	1.2E+01	--	--	4.6E-02	--	--	1.2E+00	--	--	1.2E+00
Hexachlorocyclohexane	0	1.6E-01	--	6.3E-01	4.0E+00	--	1.6E+01	4.0E-02	--	6.3E-02	1.0E+00	--	1.6E+00	1.0E+00	--	1.6E+00
Gamma-BHC ^c (Lindane)	0	--	--	1.7E+04	--	--	4.3E+05	--	--	1.7E+03	--	--	4.3E+04	--	--	4.3E+04
Hexachlorocyclopentadiene	0	--	--	8.9E-01	--	--	2.2E+03	--	--	8.9E+00	--	--	2.2E+02	--	--	2.2E+02
Hexachloroethane ^c	0	--	2.0E+00	--	--	5.0E+01	--	--	5.0E-01	0.0E+00	--	1.3E+01	0.0E+00	--	1.3E+01	--
Hydrogen Sulfide	0	--	--	4.9E-01	--	--	1.2E+01	--	--	4.9E-02	--	--	1.2E+00	--	--	1.2E+00
Indeno (1,2,3-cd) pyrene C	0	--	--	2.6E+04	--	--	6.5E+05	--	--	2.6E+03	--	--	6.5E+04	--	--	6.5E+04
Isophorone ^c	0	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--
Kepona	0	2.4E+02	9.3E+00	--	6.0E+03	2.3E+02	--	6.0E+01	2.3E+00	--	1.5E+03	5.8E+01	--	1.5E+03	5.8E+01	--
Lead	0	--	1.0E-01	--	--	2.5E+00	--	--	2.5E-02	--	--	6.3E-01	--	--	6.3E-01	--
Malathion	0	1.8E+00	9.4E-01	5.1E-02	4.5E+01	2.4E+01	1.3E+00	4.5E-01	2.4E-01	5.1E-03	1.1E+01	5.9E+00	1.3E-01	1.1E+01	5.9E+00	1.3E-01
Mercury	0	--	--	4.0E+03	--	--	1.0E+05	--	--	4.0E+02	--	--	1.0E+04	--	--	1.0E+04
Methyl Bromide	0	--	3.0E-02	--	--	7.5E-01	--	--	7.5E-03	--	--	1.9E-01	--	--	1.9E-01	--
Methoxychlor	0	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--	--	0.0E+00	--
Mirex	0	--	--	2.1E+04	--	--	5.3E+05	--	--	2.1E+03	--	--	5.3E+04	--	--	5.3E+04
Monochlorobenzene	0	7.4E+01	8.2E+00	4.6E+03	1.9E+03	2.1E+02	1.2E+05	1.9E+01	2.1E+00	4.6E+02	4.6E+02	5.1E+01	1.2E+04	4.6E+02	5.1E+01	1.2E+04
Nickel	0	--	--	1.9E+03	--	--	4.8E+04	--	--	1.9E+02	--	--	4.8E+03	--	--	4.8E+03
Nitrobenzene	0	--	--	8.1E+01	--	--	2.0E+03	--	--	8.1E+00	--	--	2.0E+02	--	--	2.0E+02
N-Nitrosodimethylamine ^c	0	--	--	1.6E+02	--	--	4.0E+03	--	--	1.6E+01	--	--	4.0E+02	--	--	4.0E+02
N-Nitrosodiphenylamine ^c	0	--	--	1.4E+01	--	--	3.5E+02	--	--	1.4E+00	--	--	3.5E+01	--	--	3.5E+01
N-Nitrosodi-n-propylamine ^c	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Parathion	0	--	3.0E-02	--	--	7.5E-01	--	--	7.5E-03	--	--	1.9E-01	--	--	1.9E-01	--
PCB-1016	0	--	3.0E-02	--	--	7.5E-01	--	--	7.5E-03	--	--	1.9E-01	--	--	1.9E-01	--
PCB-1221	0	--	3.0E-02	--	--	7.5E-01	--	--	7.5E-03	--	--	1.9E-01	--	--	1.9E-01	--
PCB-1232	0	--	3.0E-02	--	--	7.5E-01	--	--	7.5E-03	--	--	1.9E-01	--	--	1.9E-01	--
PCB-1242	0	--	3.0E-02	--	--	7.5E-01	--	--	7.5E-03	--	--	1.9E-01	--	--	1.9E-01	--
PCB-1248	0	--	3.0E-02	--	--	7.5E-01	--	--	7.5E-03	--	--	1.9E-01	--	--	1.9E-01	--
PCB-1254	0	--	3.0E-02	--	--	7.5E-01	--	--	7.5E-03	--	--	1.9E-01	--	--	1.9E-01	--

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations		
		Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH
PCB-1260	0	--	3.0E-02	--	--	7.5E-03	--	--	7.5E-03	--	--	1.9E-01	--	--	1.9E-01	--
PCB Total ^c	0	--	--	1.7E-03	--	--	4.3E-02	--	--	1.7E-04	--	--	4.3E-03	--	--	4.3E-03
Pentachlorophenol ^c	0	1.3E+01	7.9E+00	8.2E+01	3.3E+02	2.0E+02	2.1E+03	3.3E+00	2.0E+00	8.2E+00	8.1E+01	4.9E+01	2.1E+02	8.1E+01	4.9E+01	2.1E+02
Phenol	0	--	--	4.6E+06	--	--	1.2E+08	--	--	4.6E+05	--	--	1.2E+07	--	--	1.2E+07
Phosphorus (Elemental)	0	--	0.1	--	--	2.5E+00	--	--	2.5E-02	--	--	6.3E-01	--	--	6.3E-01	--
Pyrene	0	--	--	1.1E+04	--	--	2.8E+05	--	--	1.1E+03	--	--	2.8E+04	--	--	2.8E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Gross Alpha Activity	0	--	--	1.5E+01	--	--	3.8E+02	--	--	1.5E+00	--	--	3.8E+01	--	--	3.8E+01
Beta and Photon Activity (mrem/yr)	0	--	--	4.0E+00	--	--	1.0E+02	--	--	4.0E-01	--	--	1.0E+01	--	--	1.0E+01
Strontium-90	0	--	--	8.0E+00	--	--	2.0E+02	--	--	8.0E-01	--	--	2.0E+01	--	--	2.0E+01
Tritium	0	--	--	2.0E+04	--	--	5.0E+05	--	--	2.0E+03	--	--	5.0E+04	--	--	5.0E+04
Selenium	0	3.0E+02	7.1E+01	1.1E+04	7.5E+03	1.8E+03	2.8E+05	7.5E+01	1.8E+01	1.1E+03	1.9E+03	4.4E+02	2.8E+04	1.9E+03	4.4E+02	2.8E+04
Silver	0	2.0E+00	--	--	5.0E+01	--	--	5.0E-01	--	--	1.3E+01	--	--	1.3E+01	--	--
1,1,2,2-Tetrachloroethane ^c	0	--	--	1.1E+02	--	--	2.8E+03	--	--	1.1E+01	--	--	2.8E+02	--	--	2.8E+02
Tetrachloroethylene ^c	0	--	--	8.9E+01	--	--	2.2E+03	--	--	8.9E+00	--	--	2.2E+02	--	--	2.2E+02
Thallium	0	--	--	6.3E+00	--	--	1.6E+02	--	--	6.3E-01	--	--	1.6E+01	--	--	1.6E+01
Toluene	0	--	--	2.0E+05	--	--	5.0E+06	--	--	2.0E+04	--	--	5.0E+05	--	--	5.0E+05
Toxaphene ^c	0	2.1E-01	2.0E-04	7.5E-03	5.3E+00	5.0E-03	1.9E-01	5.3E-02	5.0E-05	7.5E-04	1.3E+00	1.3E-03	1.9E-02	1.3E+00	1.3E-03	1.9E-02
Tributyltin	0	3.8E-01	1.0E-03	--	9.5E+00	2.5E-02	--	9.5E-02	2.5E-04	--	2.4E+00	6.3E-03	--	2.4E+00	6.3E-03	--
1,2,4-Trichlorobenzene	0	--	--	9.4E+02	--	--	2.4E+04	--	--	9.4E+01	--	--	2.4E+03	--	--	2.4E+03
1,1,2-Trichloroethane ^c	0	--	--	4.2E+02	--	--	1.1E+04	--	--	4.2E+01	--	--	1.1E+03	--	--	1.1E+03
Trichloroethylene ^c	0	--	--	8.1E+02	--	--	2.0E+04	--	--	8.1E+01	--	--	2.0E+03	--	--	2.0E+03
2,4,6-Trichlorophenol ^c	0	--	--	6.5E+01	--	--	1.6E+03	--	--	6.5E+00	--	--	1.6E+02	--	--	1.6E+02
Vinyl Chloride ^c	0	--	--	6.1E+01	--	--	1.5E+03	--	--	6.1E+00	--	--	1.5E+02	--	--	1.5E+02
Zinc	0	9.0E+01	8.1E+01	6.9E+04	2.3E+03	2.0E+03	1.7E+06	2.3E+01	2.0E+01	6.9E+03	5.6E+02	5.1E+02	1.7E+05	5.6E+02	5.1E+02	1.7E+05

Notes:

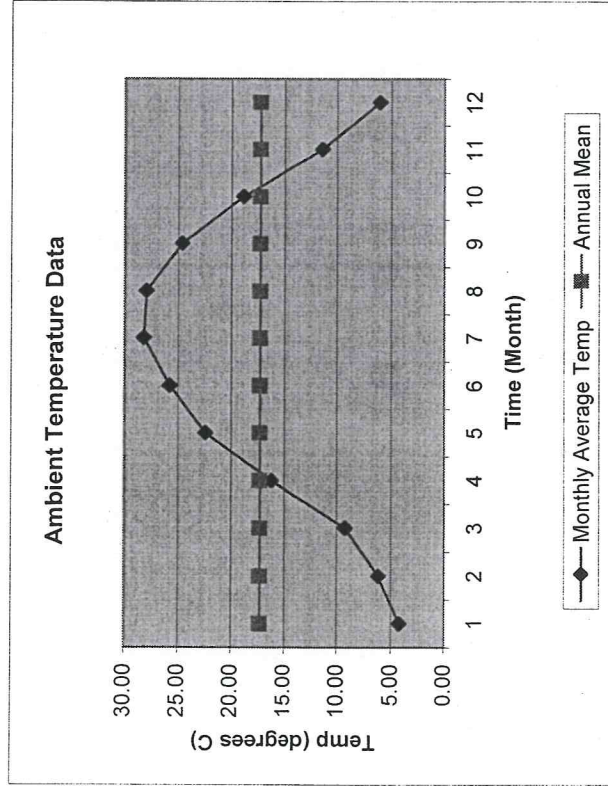
1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. For transition zone waters, spreadsheet prints the lesser of the freshwater and saltwater water quality criteria.
6. Regular WLA = (WQC x WLA multiplier) - (WLA multiplier - 1)(background conc.)
7. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
= (0.1(WQC - background conc.) + background conc.) for human health
8. Antideg. WLA = (Antideg. Baseline)(WLA multiplier) - (WLA multiplier - 1)(background conc.)

Metal	Site Specific Target Value (SSTV)
Antimony	1.1E+04
Arsenic III	1.4E+02
Cadmium	3.3E+01
Chromium III	#VALUE!
Chromium VI	1.9E+02
Copper	2.3E+01
Lead	3.5E+01
Mercury	1.3E-01
Nickel	3.1E+01
Selenium	2.7E+02
Silver	5.0E+00
Zinc	2.3E+02

Note: do not use QL's lower than the minimum QL's provided in agency guidance

	Jan	Feb	Mar	April	May	June	July	August	Sept	Oct	Nov	Dec
Average	4.21	6.17	9.28	16.25	22.43	25.74	28.20	27.95	24.57	18.87	11.40	6.06
	1.61	4.15	13.33	17.78	25.39	26.11	30	28.89	24.44	21.11	10.58	4.49
	6.43	5.92	7.76	16.25	19.76	21.54	29.9	27.27	22.22	16.4	7.46	10.2
	5.35	7.59	5.41	14.74	25.51	27.15	28.59	29.31	24.93	21.3	13.56	4.83
	3.98	5.95	12.46	16.27	22.24	26.81	28.45	28.14	26.65	19.46	12.2	5.46
	5.29	6.14	11.13	12.07	22.94	27.08	26.78	28.26	26.7	14.05	13.48	4.61
	2.61	9.95	7.19	18.22	20.38		28.54	25.25	23.15	20.37	11.66	6.78
		3.48	10.13	17.04	20.78		26.48	28.54	25.96	18.94	10.87	
			6.8	17.59			28.33		22.54	19.36		
							26.59					
							28.58					
							26.88					
							29.29					

90th% Temp from Nov - April 16.27
10th% Temp from Nov - April 4.18
Average Temp from Nov - April 9.26



VA0026263 - Urbanna STP
Fact Sheet

Attachment 9 – 303(d) – TMDL Fact Sheets

2010 Fact Sheets for 303(d) Waters

RIVER BASIN:	Rappahannock River Basin	HYDROLOGIC UNIT:	02080104
STREAM NAME:	Rappahannock River		
TMDL ID:	RPPMH-DO-BAY	2010 IMPAIRED AREA ID:	CB-RPPMH
ASSESSMENT CATEGORY:	5A	TMDL DUE DATE:	2010
IMPAIRED SIZE:	123.53 - Sq. Mi.	Watershed:	VAP-E22E
INITIAL LISTING:	1998		
UPSTREAM LIMIT:	Mesohaline boundary		
DOWNSTREAM LIMIT:	Mouth at Chesapeake Bay		

The mesohaline Rappahannock River and tidal tributaries.

CLEAN WATER ACT GOAL AND USE SUPPORT:

Aquatic Life Use - Not Supporting, Open Water Subuse - Not Supporting, Deep Water Subuse - Not Supporting, Deep Channel Use - Fully Supporting

IMPAIRMENT: Dissolved Oxygen

The mainstem of the Rappahannock River from Myrtle Swamp to its mouth was originally listed in 1998 by DEQ due to dissolved oxygen exceedances and nutrient overenrichment. The EPA extended the segment upstream to the confluence with Totuskey Creek. In the 2004 cycle dissolved oxygen exceedances were noted in deepwater and deep channel stations downstream of the confluence with Lancaster Creek (Morattico), which is further downstream.

The new Chesapeake Bay Water Quality Standards were implemented during the 2006 cycle. The mesohaline portion of the Rappahannock fails the Open Water Subuse's summer 30-day dissolved oxygen criteria and applicable areas fail the Deep Water 30-day dissolved oxygen criteria. During the 2008 cycle, the Deep Channel Subuse's instantaneous minimum dissolved oxygen criteria was violated, however the segment met the use during the 2010 cycle and will be delisted. The Open Water Subuse's 30-day rest-of-year standard was met and there was insufficient data to assess the other dissolved oxygen criteria.

IMPAIRMENT SOURCE: Point Source, Nonpoint Source

Tributary strategy has been developed.

RECOMMENDATION: Problem Characterization

Attachment 10 – Owner Comments and Resolution

February 13, 2012

Jaime Bauer
Dept of Environmental Quality
4949-A Cox Road
Glen Allen, VA 23060

RE: Urbanna STP VA0026263

Dear Ms. Bauer:

Hampton Roads Sanitation District (HRSD) has reviewed the draft permit and fact sheet for the Urbanna STP and offers the following comments for DEQ consideration.

Part I.A.1. lists the monitoring requirements for the facility. The currently effective permit for Urbanna requires 8-hour composite samples for BOD, TSS, and ammonia. The draft permit requires 4-hour composites. As noted in footnote c, the Urbanna STP also is regulated by general nutrient permit VAN020034. This permit requires 8-hour composite samples for the nutrient parameters. In order to provide consistency for our operators in charge of sampling, HRSD requests that the draft Urbanna permit be modified to require 8-hour composite samples for BOD, TSS, and ammonia.

Item 20 of the Fact Sheet provides the rationale for the compliance reporting in Special Conditions. The paragraph for Part I.C.7. should be modified to state, "The Quantification Levels (QLs) given for BOD, TSS, and ammonia are standard Agency prescribed QLs." The last sentence of the paragraph should be deleted. The currently effective permit does not contain a QL for BOD.

Item 25 of the Fact Sheet discusses the evaluation for reduced monitoring. HRSD agrees with the sampling frequencies imposed in the draft permit but finds the sentence, "However, Urbanna Creek is impaired for dissolved oxygen and historically has had poor tidal flushing" to be in conflict with Item 14 of the Fact Sheet. Item 14 states that the Rappahannock mesohaline estuary is impaired for low dissolved oxygen but Urbanna Creek shows acceptable local conditions. HRSD recommends deleting the sentence and instead include a statement that BOD and TSS sampling frequencies were adjusted to be consistent with the recommendations of the VPDES Permit Writer's Manual.

Item 25 of the Fact Sheet also discusses the applicability of nutrient allocations to the facility. The first sentence of the paragraph states that the Urbanna STP was

considered a significant discharge of the nutrients to the Chesapeake Bay because it has a design capacity of greater than 100,000 gallons per day. This should be corrected to state that the plant is a significant discharger because it has a capacity greater than 40,000 gallons per day.

Please contact me if you have any questions.

Sincerely,

A handwritten signature in cursive script, reading "Jamie S. Heisig-Mitchell". The signature is written in dark ink and is positioned above the printed name.

Jamie S. Heisig-Mitchell
Chief of Technical Services Division

Bauer, Jaime (DEQ)

From: Nicklas, Sharon [SNICKLAS@HRSD.COM]
Sent: Friday, February 17, 2012 11:55 AM
To: Bauer, Jaime (DEQ)
Cc: Mitchell, Jamie
Subject: RE: VA0026263 - Urbanna STP Draft Permit Response to Owner Comments

Jaime,

HRSD agrees with all of the changes for Urbanna's permit and fact sheet.

Sharon Nicklas
HRSD-Permits Manager
757-460-4245
snicklas@hrsd.com

From: Bauer, Jaime (DEQ) [mailto:Jaime.Bauer@deq.virginia.gov]
Sent: Wednesday, February 15, 2012 12:29 PM
To: Nicklas, Sharon
Subject: VA0026263 - Urbanna STP Draft Permit Response to Owner Comments

Sharon,

Please see below for responses to owner comments on the Urbanna STP draft permit and fact sheet:

Permit Part I.A.1 – As requested the sample type for BOD₅, TSS, and Ammonia be reverted back to 8 hour composites instead of 4 hour composites to be consistent with the sampling requirements listed in the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed. The sample type is considered more stringent and therefore, the agency does not object to the change.

Fact Sheet Item 20. Part I.C.7 Compliance Reporting Special Condition. Last sentence of rationale has been revised, rather than deleted, to the following:

The BOD₅ QL of 2 mg/L was added for consistency with recently adopted VPDES General Permit regulations.

Fact Sheet Item 25. Reduced Monitoring Frequency discussion. I propose the following changes to the fact sheet:

A reduced monitoring evaluation was considered in accordance with GM10-2003. Due to the seasonal tiered limitation for ammonia, reduced monitoring is not appropriate for this parameter. Also, monitoring reductions for bacteria are not appropriate when using alternate disinfection. TSS and BOD₅ and dissolved oxygen were all considered for reduced monitoring. However, Urbanna Creek is impaired for dissolved oxygen and historically has had poor tidal flushing. Since dissolved oxygen depends on the oxygen demand and sediment concentrations instream, it is best professional judgment that monitoring for TSS, BOD₅, and dissolved oxygen, not be reduced from baseline sampling frequencies in order to ensure that the effluent is not causing or contributing to the impairment for dissolved oxygen. In the 2007 permit, the monitoring frequency for TSS and BOD₅ were set at a frequency of 3 samples per week. This monitoring frequency is inconsistent with the VPDES Permit Manual (GM10-2003) Sampling Schedule Table for a plant of this size. Guidance establishes a monitoring frequency for these parameters at one sample per week. Therefore, the revision of the

monitoring frequency in accordance with the VPDES Permit Manual represents a reduction in monitoring frequency at this time. Reduced monitoring for dissolved oxygen can be considered on a case-by-case basis and was not evaluated at this time. The 2007 permit included new dissolved oxygen limitations that became effective after a schedule of compliance. To ensure that the effluent was able to meet the limitations, plant equipment and operations were modified. Additionally, less than 3 years of effluent data for dissolved oxygen exists. It is the best professional judgment of staff that the monitoring frequency for dissolved oxygen remain at once per day until such time that additional data may be collected.

Fact Sheet Item 25. Applicability of the Nutrient General Permit. *Significant discharger* is defined in the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed as follows:

"Significant discharger " means (i) a sewage treatment works discharging to the Chesapeake Bay watershed upstream of the fall line with a design capacity of 0.5 million gallons per day or greater, or an equivalent load discharged from industrial facilities (ii) **a sewage treatment works discharging to the Chesapeake Bay watershed downstream of the fall line with a design capacity of 0.1 million gallons per day or greater, or an equivalent load discharged from industrial facilities;** (iii) a planned or newly expanding sewage treatment works discharging to the Chesapeake Bay watershed upstream of the fall line that is expected to be in operation by December 31, 2010 with a permitted design of 0.5 million gallons per day or greater, or an equivalent load to be discharged from industrial facilities; or (iv) a planned or newly expanding sewage treatment works discharging to the Chesapeake Bay watershed downstream of the fall line that is expected to be in operation by December 31, 2010 with a design capacity of 0.1 million gallons per day or greater, or an equivalent load to be discharged from industrial facilities

40,000 gallons per day referenced in your comment refers to the threshold for registering for the General Permit. No change is necessary.

Also, it appears that item 3 of the FS will need to be updated. Can you please confirm the phone number and mailing address for Jamie, and I will update the information on both the West Point and Urbanna STP fact sheets?

Owner Contact:

Name:	Ms. Jamie S. Heisig-Mitchell
Title:	Hampton Roads Sanitation District (HRSD) Chief of Technical Services Divisions
Telephone No.:	757-460-4246
Address:	1436 Air Rail Avenue, Virginia Beach, VA 23455

If you have any questions, please let me know.

Thanks,
Jaime

Jaime L. Bauer | Environmental Specialist II | DEQ Piedmont Regional Office | 804.527.5015 | jaime.bauer@deq.virginia.gov